UNITED STATES OF AMERICA: WAR DEPARTMENT

MONTHLY WEATHER REVIEW.

(GENERAL WEATHER SERVICE OF THE UNITED STATES.)

DECEMBER, 1888.

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PREPARED UNDER THE DIRECTION OF BRIGADIER GENERAL A. W. GREELY, CHIEF SIGNAL OFFICER OF THE ARMY,

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PUBLISHED BY AUTHORITY OF THE SECRETARY OF WAR.

WASHINGTON CITY: SIGNAL OFFICE. 1889.

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UNITED STATES SIGNAL SERVICE MONTHLY WEATHER REVIEW.

VOL. XVI.

WASHINGTON CITY, DECEMBER, 1888.

No. 12.

INTRODUCTION.

based upon reports of regular and voluntary observers of both

On chart i the paths of the centres of eight areas of low pressure are shown; the average number traced for December during the last fifteen years being 11.6.

The areas of high and low pressure are discussed under their respective headings. Descriptions of the storms that occurred over the north Atlantic Ocean are also given, and their approximate paths shown on chart i, on which also appear the limits of fog-belts west of the fortieth meridian. No ocean ice was reported during the month. Over the north Atlantic severe storms occurred off the coast of the United States from the 11th to 14th and 17th to 19th; over mid-ocean heavy gales were reported on the 4th, 9th, 18th, and 20th, while over the eastern part of the ocean the severest disturbances occurred on the 21st and 22d.

Chart ii exhibits the distribution of mean atmospheric pressure and mean temperature for the month. The mean temperature was above the normal over a greater part of the country, the greatest departures above the normal being noted in Montana and Dakota, where, at stations, they amounted to more than 15°. Over portions of the south Atlantic, middle, and eastern Gulf states the mean temperature was below the normal, the greatest deficiencies being shown over southern Florida, where they exceeded 4°. The means were also slightly below the normal within an area extending from southeast Arizona to north-central California. At a number of stations in the north-central and northwest districts the maximum temperatures were higher than for any preceding December during the periods of observation.

The distribution of rainfall for December, 1888, is shown on chart iii, and the normal precipitation for eighteen years is exhibited on chart iv.

The precipitation was in excess of the normal in California and the southern plateau region, within an area extending from central Texas northward to the lower Missouri valley, in portions of the upper lake region and the upper Mississippi valley, southern Florida, and from the northern part of the middle Atlantic states to the Canadian Maritime Provinces, except in a small area along the south New England coast. Elsewhere in the United States and Canada there was a defi-ciency in rainfall. Over a considerable portion of the country the departures from the normal December rainfall were marked. The current and normal precipitation at the various stations and in the several districts is treated in detail under the head-extracts, and special reports.

This REVIEW treats generally the meteorological conditions ing of "Precipitation." In the table of excessive precipitaof the United States and Canada for December, 1888, and is hased upon reports of regular and voluntary observers of both cessive monthly, daily, and hourly rainfalls, not before available for publication, are given for each month for the periods of observation for all stations from which precipitation reports have been received. Following the table of supplementary excessive precipitation will be found a list of errors detected in the series of tables of excessive precipitation published in the REVIEW during 1888. The series of excessive precipitation tables published monthly during 1888, together with the supplementary table which appears in the current Review, embraces all data of this class contained in reports received to date.

> Chart v exhibits the depth of snow on the ground at the close of the month. It is proposed to publish similar charts in the REVIEW showing the depth of snow on the ground on the 15th and last day of each of the winter months. In the current month the depth of snow on the 15th was insufficient to admit of charting, and the small amount of snow which fell throughout the northern portion of the country constituted an unusual and noteworthy feature. This chart also shows the limits of freezing weather during December, 1888.

> Commencing with July, 1888, the meteorological means for the regular stations of the Signal Service have been determined from observations taken twice daily at 8 a. m. and 8 p. m. (75th meridian time). These hours of observation have been permanently adopted to supersede the former system of tri-daily observations taken at eight-hour intervals.

> In the preparation of this REVIEW the following data, received to January 20, 1889, have been used: the regular semi-daily weather-charts, containing data of simultaneous observations taken at 133 Signal Service stations and 22 Canadian stations, as telegraphed to this office; 175 monthly journals and 177 monthly means from the former and 22 monthly means from the latter; 420 monthly registers from voluntary observers; 95 monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the Hydrographic Office, United States Navy, and the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, and Texas, and the Central Pacific Railway Company; trustworthy newspaper

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for Decem- the Signal Service were superseded by observations taken ber, 1888, as determined from observations taken daily at 8 twice daily at the hours named. A protracted series of hourly a. m. and 8 p. m. (75th meridian time), is shown on chart observations has shown that the difference is almost inappre-ii by isobars. On July 1, 1888, the tri-daily observations of ciable between the mean pressure obtained from two obser-

vations taken at these hours and that determined from tridaily observations taken at eight-hour intervals.

The mean pressure for December, 1888, is highest at stations in the middle plateau region of the Rocky Mountains, where it rises to 30.25, and over portions of Tennessee and the eastern Gulf states, where the values are above 30.20. The area of lowest mean pressure occupies the Gulf of Saint Lawrence, where the readings fall to 29.80 at Sydney, C. B. I. In the north Pacific coast region the mean pressure decreases northward to Tatoosh Island, Wash., where a reading of the normal track of such areas for December; also that the 29.80 is reported. As compared with the pressure chart for number of areas of high pressure for this month was less than November, 1888, a decrease in pressure is shown north of a line traced from the middle Pacific coast and middle plateau region southeastward into Texas, and thence to the Atlantic | the more prominent characteristics of the high areas: coast in about lat. N. 37°; to the southward of this line there has been an increase in pressure. The greatest decrease has occurred over the Canadian Maritime Provinces, where it amounts to .27 at Sydney, C. B. I., and the most marked increase is noted over the southern plateau region of the Rocky Mountains, where at stations in Arizona the mean pressure is .11 and .12 higher than for the preceding month. Over the northern portions of the country the decrease becomes less marked from the Atlantic and Pacific coasts to Montana, where it averages less than .05, while over Florida, the eastern Gulf states, and along the immediate west Gulf coast the increase ranges from .05 to .09.

As compared with the normal pressure for December the mean pressure was below the normal over Canada, New England, the middle Atlantic states, a greater part of the Lake region, the upper Mississippi and Missouri valleys, the western portions of the plateau regions of the Rocky Mountains, and along the Pacific coast, the greatest deficiencies occurring over the Canadian Maritime Provinces, and along the Pacific coast between the fortieth and forty-fifth par-allels, where they exceed .10. From Michigan southward to the Gulf of Mexico and thence northwestward over the Rocky Mountain regions to the upper valley of the Columbia River, and generally over the more Southern States and territories east of the one hundred and fifteenth meridian, the pressure was above the normal, the most marked excesses appearing in Colorado and southeastern Wyoming, where they amounted to .07 and .08, respectively. Within a limited area extending over parts of Louisiana and Mississippi a small deficiency was shown.

BAROMETRIC RANGES.

The monthly barometric ranges at the various Signal Service stations are given in the table of miscellaneous meteorological data. The general rule, to which the monthly barometric ranges over the United States are found to conform, is that they increased with the latitude and decreased slightly, though somewhat irregularly, with increasing longitude. In December, 1888, the ranges decreased from the south New England coast, where they exceeded 1.80, to the upper Mississippi val-ley, where they were less than .90. From this region there was an increase of more than .40 to the northern plateau region of the Rocky Mountains, from whence there was a decrease to the Pacific coast. Along the Atlantic coast the extreme ranges varied from .49 at Key West, Fla., to 1.83 at Block Island, R. I.; between the eighty-second and ninety-second meridians, .76 at Pensacola, Fla., and Montgomery, Ala., to 1.07 at Alpena, Mich.; between the Mississippi River and Rocky Mountains, .56 at Corpus Christi, Tex., to 1.18 at Denver, Colo.; in the plateau and Rocky Mountain regions, .52 at Yuma, Ariz., to 1.33 at Helena, Mont.; on the Pacific coast, .47 at San Diego, Cal., to 1.06 at Olympia, Wash.

AREAS OF HIGH PRESSURE.

Six areas of high pressure were observed within the limits of the United States during December. They all moved to

North Carolina. The remaining three were first observed over California or the central plateau region and moved slowly to the southeastward; two of these disappeared after reaching the Gulf states and the other disappeared in the southern Rocky Mountain region by a gradual decrease of pressure. During the month only two areas of high pressure passed over the Northern States east of the Mississippi, and an examination of the weather charts shows that the mean track of the areas of high pressure lies considerably to the southwest of the normal track of such areas for December; also that the

The following table exhibits, in a concise manner, some of

Lat. N.	Long. W.	Lat. N.	Long. W.	Duration.	Velocity p	Date.	Station.	Reading.
				-		-		_
37 42 53 37 52 52 46	0 118 113 119 100 112 115	34 37 35 39 34 37 45	75 166 72 88 74 73 114	Days. 7.0 3.0 6.0 6.0 5.5 6.5 4.0	19-4 18-1	9 15 18	Montrose, Colo	Inches. 30.6 30.3 30.6 30.6 30.6 30.6 30.6
	53 37 52	42 118 53 113 37 119 52 100 52 112	42 118 37					42 118 37 106 3.0 11.1 9 Montrose, Colo

Novs.—Average rate of progress, 18.3 miles per hour. *Also at Hatteras and Raleigh N. C., same date. † Also at Philadelphia, same date. ‡ Stationary.

I.—The month opened with this area advancing from the Pacific over central California, the pressure being from .10 to .20 above the normal in the central valleys, and with areas of low pressure to northeast of New England and north of Montana. This area of high pressure moved slowly to the eastward, inclining first to the northeast and afterwards to the southeast. On the morning of the 4th it covered the entire Rocky Mountain and plateau regions, extending from the west Gulf to Washington Territory, the centre being inclosed by the isobars of 30.5, 30.4, 30.3. A low area of considerable energy was central to the north of Lake Superior, where the pressure was below 29.40, thus giving a difference of 1.00 inch in pressure between Lake Superior and the Rocky Mountain stations. The area of high pressure was apparently retarded and remained over the Rocky Mountain region during the 5th, the pressure at the centre decreasing about .20, while the area of low pressure moved southward over the Lake region to the middle Atlantic coast attended by an increase of pressure of about .20 at the centre. After the 5th this area moved southeastward to the west Gulf states, where it was central on the 6th, and thence eastward over the Southern States during the 7th and 8th, disappearing to the eastward of the south Atlantic coast, the pressure decreasing during the easterly movement from the Rocky Mountain region.

II .- This was an area of high pressure of slight energy which developed over the northern plateau region during the 7th, and moved slowly southeastward until the 10th, when it was last observed central over Colorado, where it disappeared as a separate area, and apparently formed a part of high area iii which was then central north of Montana.

III.—Number iii was observed on the morning of the 10th far to the north of Montana, the pressure being generally high over the Rocky Mountain region. It moved slowly to the southeastward, attended by a moderate cold wave over the Northern States east of the Mississippi. Its general course was easterly until it reached the region of Lake Superior on the 13th, when it moved almost directly southward to the Ohio Valley and thence eastward to the Atlantic coast. This area extended, covering the greater portion of the country east of the south of east, and five reached the Atlantic or Gulf coast.

Three were first observed in the region north of Montana and Dakota, all of which disappeared to the east of Virginia or central east of North Carolina on the 16th, moving eastward. IV.—Number iv apparently formed over southern California on the 15th, when the pressure was below the normal on the south Pacific coast and a trough of low pressure covered the eastern slope of the Rocky Mountains. It moved eastward to Arizona and thence northward to Idaho, where it was central on the 17th. It extended eastward, moving in a southeasterly direction; and on the 19th, when central in western Kansas, this area extended from the Atlantic to the Pacific while storms of considerable energy were central northeast of New England and north of Montana. The succeeding reports show that the general movement of this area was southeastward during the 20th and 21st, and it passed over the Gulf of Mexico on the last-named date, causing freezing weather and killing frosts in northern Florida.

V.—When the preceding area of high pressure covered the lower Mississippi valley on the 20th this area appeared north of Dakota, from which region it moved southeastward to Lake Ontario, causing a decided fall in temperature in the Saint Lawrence Valley, lower lake region, and northern New England on the 22d. The direction of movement changed, and after reaching Lake Ontario it passed almost directly southward to North Carolinia, where it remained almost stationary during the 23d, 24th, and 25th. The pressure decreased slowly at Atlantic coast stations after the 23d, and this area was last observed central near, and east of, Hatteras, N. C., on the

26th. VI.—This area appeared north of Montana on the 23d and after apparently moving slowly eastward during the succeeding twenty-four hours it extended southward over the northern Rocky Mountain region during the 25th and 26th as a small but well-defined area of high pressure and was central on the 26th in southwestern Montana where the barometric pressure was 30.44, and well-marked areas of low pressure were central in the upper Mississippi valley, north of Montana, and on the north Pacific coast. This area extended southeastward from Washington Territory to the lower Mississippi valley during the 26th and 27th, after which it was apparently separated by the Rocky Mountain range, that portion east of the Rocky mountains forming an area of high pressure which moved directly eastward from Kansas to the middle Atlantic coast, the pressure increasing with the easterly movement, the maximum (30.64) occurring at Washington City and Philadelphia on the morning of the 30th, after which date this portion of the area disappeared to the eastward, while that portion of the area to the westward of the Rocky mountains remained almost stationary over the northern plateau region from the 27th to the close of the month, the pressure increasing at the centre and the area becoming more extended until the last day of the month, when the maximum pressure of the month, 30.94, was observed at Helena, Montana, and the area included within its limits the entire country, with the exception of New Eng-

AREAS OF LOW PRESSURE.

Eight well-defined areas of low pressure appeared within or near the limits of the stations of observation during the month of December. Six of these disturbances probably developed to the west of the Rocky Mountains, while one apparently developed in the lower Mississippi valley, and one was first observed north of the Lake region. The general direction of movement of all low areas observed to the west of the Mississippi Valley was to the south of east, but after reaching the Mississippi Valley the course changed to the north of east in all cases where the centre of the low area passed to the eastward within the United States. The areas of low pressure which developed in British America continued their southeasterly course until they reached the Saint Lawrence valley or Atlantic coast. Secondary disturbances developed in the southern portions of the barometric depressions developing to the eastward in three instances, and in each the secondary disturbance increased in energy and became the most marked feature of the disturbance.

The following table exhibits the principal facts regarding these low areas:

	0	First			st rved.		er h'r		. Lowest pressure.	
No.	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.	Duration.	Velocity p	Date.	Station.	Reading.
I II IV V VI VIII	4 5 8 8 13 19 21 23	53 53 53 34 51 47 54 53 42	90 114 95 123 126 113 112 115	0 43 47 47 48 47 43 46 51	59 81 58 79 60 66 86 64	Days. 2.5 1.5 4.5 3.0 5.0 2.5 3.0 5.0	Miles. 30.0 48.4 27.8 29.2 33.3 40.8 26.4 31.7	4 6 12 8 18 20 22 28	P. Arthur's Landing, Ont Minnedosa, Man. Halifax, N.S. Medicine Hat, N.W.T. Wood's Holl, Mass. Sault de St. Marie, Mich, Minnedosa, Man. Bird Rocks, G. of St. L.	Inches, 29, 31 29, 51 28, 71 29, 41 28, 71 29, 51 29, 31 28, 71

Average rate of progress, 33.5 miles per hour.

I .- The first low area of the month appeared north of Minnesota and Dakota on the 2d, and probably approached that region from the Pacific. It passed eastward north of United States and its centre was first definitely located on the morning of the 4th north of, and near, Lake Superior. It passed southeastward during the 5th, forming two disturbances, one of which passed southward over the upper lake region and thence southeastward to the middle Atlantic coast, the other moving over the Saint Lawrence Valley to northern New England, after which the two disturbances apparently united to the east of southern New England, from which point the general course of movement was to the northeast. This storm apparently attained its maximum energy while its centre was north of the Lake region on the morning of the 4th. After passing within the limits of the United States the pressure increased at the centre of disturbance, and after leaving the coast of the United States the pressure again diminished. The winds attending this storm reached a velocity of thirty-six miles per hour from southwest in the Lake region when the centre was north of Lake Huron, and on the New England and middle Atlantic coasts the maximum wind velocities ranged from forty to forty-eight miles per hour.

II.—Number ii was central north of Montana on the afternoon of the 5th, when the preceding disturbance extended over New England to the middle Atlantic states. It moved rapidly eastward north of the United States reaching Lake Superior on the afternoon of the 6th and disappearing on the 7th to the northeast of the Lake region, without causing any marked disturbance of atmospheric conditions within the United States.

III.—When the preceding area of low pressure disappeared to the northeast of the Lake region on the 7th, a trough of low pressure extended from the Saint Lawrence Valley southwestward to Arizona, with areas of high pressure over the south Atlantic coast and central plateau region. This barometric trough covered the Mississippi Valley on the following day, and the disturbance traced as number iii formed in the southern portion of this trough and was apparently forced to the southeastward by the area of high pressure from the Rocky Mountain region. It passed eastward along the east Gulf coast during the 9th, followed by brisk to high northerly winds, and on the morning of the 10th was central near Jacksonville, Fla., where the direction of movement changed to northeasterly. It followed the general direction of the coast line, the centre passing from northern Florida to Nova Scotia in Dangerous gales occurred on the New forty-eight hours. England and middle Atlantic coasts on the 11th, the storm apparently reaching its maximum energy while the centre was passing over Nova Scotia, where the minimum pressure of 28.76 was recorded on the morning of the 12th at Halifax. A maximum wind velocity of seventy miles per hour occurred at Block Island, R. I., on the afternoon of the 11th.

The following notes from the reports of Signal Service observers relate to this storm:

Cape Henry, Va., 10th: high northeasterly winds prevailed in the afternoon, increasing in force during the night, and attaining a maximum velocity of fifty miles per hour; high winds prevailed also all day on the 11th.

Philadelphia, Pa., 11th: light rain began during the night and ended at 11.15 a.m.; brisk northeasterly and brisk to high northwesterly winds prevailed from 9 a.m. throughout the day; maximum velocity, thirty-six miles per hour. The barometer fell 0.50 during the twenty-four hours ending at m., 11th.

Block Island, R. L., 10th: light north to east winds. Order to hoist cautionary northeast signals received. Storm from the northeast began 10.30 p. m., and reached a maximum velocity of thirty miles per hour at 11.55 p. m. 11th: the storm continues; highest wind velocity, seventy miles per hour, eccurred 8.30 p. m.; storm ended 7.55 p. m.
Boston, Mass.: the barometer fell rapidly during the night of the 10-11th and on the following day, and strong southeast and east winds increased madually in velocity, blowing a gale during the afternoon of the 11th and night

gradually in velocity, blowing a gale during the afternoon of the 11th and night of the 11-12th; maximum velocity forty-four miles from north; barometer rose on the 12th, with brisk to high westerly winds; maximum velocity forty-

IV.—When area of low pressure number iii, previously described, was forming in the lower Mississippi valley this disturbance was moving eastward north of Washington Ter-It moved rapidly across the continent to the Lake region, the centre remaining north of the United States, and the rate of movement diminishing as it approached the Lake region. The pressure at the centre increased with the easterly movement and it disappeared on the 11th, apparently uniting with low area number iii off the coast of New England.

V.-On the 12th and 13th an area of low pressure covered the north Pacific coast and northern plateau region, the centre being apparently to the west of the coast line. Severe gales were reported on the 12th from the mouth of the Columbia River, the wind reaching a maximum velocity of seventy miles per hour on the 12th, sixty on the 13th, and forty-four on the afternoon of the 13th, all from the south. This storm caused general rains on the Pacific coast, the precipitation being generally heavy throughout California. It apparently moved over the northern plateau region and thence southeastward, crossing to the eastern slope of the Rocky Mountains, where it was central on the morning of the 15th. It covered the central valleys on the 16th, causing heavy rains in all states east of the Rocky Mountains. The principal centre of disturbance passed northeast towards the upper lake region, where it disappeared, a secondary disturbance forming in the southern portion of the area during the morning of the 17th and developing great energy during the day, moving rapidly northeastward along the middle Atlantic and New England coasts, attended by severe easterly shifting to westerly gales and very heavy rains. The barometer fell to 28.78 at Wood's Holl, Mass., on the morning of the 18th, when the centre was near that station. It was followed by a cold wave and snow throughout the Northern States and as far south as Tennessee and North Carolina, the fall in temperature ranging from 20° to 30° at most stations.

The following are extracts from reports of Signal Service observers:

Hatteras, N. C., 17th: storm began 11 a, m., reached a maximum velocity of forty-two miles from the south at 11.05 a. m.; continued during the remain-

der of the day, and ended at 3.20 a. m., 18th.

Boston, Mass., 17-18th: brisk to high southerly winds occurred during the night and the day of the 18th, maximum velocity thirty-eight miles west.

Philadelphia, Pa., 17th: a heavy rain storm set in 9.45 last night and rain has fallen steadily all day. The barometer has fallen rapidly and steadily and at midnight read 28.65 actual, a fall of 1.55 inches since noon yesterday.

There has been a corresponding rise in temperature, the mean to-day being 15° higher than yesterday; winds variable from light to fresh. Rain ended 6 p. m., but occasional light showers followed during the evening; total rainfall for the day, 2.23 inches. At 12.30 a. m., 18th, wind shifted to northwest, increasing in force to a gale (forty-eight miles) between 3 and 4 a. m., continuing high all day and diminishing in force during the afternoon. The change in wind shortly after midnight corresponded with lowest barometer, 28.65 actual. The rise in the barometer after 1 a. m. was as rapid as had been its fall during the preceding day. The change in barometric pressure is represented by an inverted cone, with depth of 1.5 inches. Rain ended shortly after midnight.

VI.—This storm was central far to the north of Montana on the morning of the 19th, and the reports indicate that it probably developed in the north Pacific. It passed southeastward towards Lake Superior, where it was central on the morning of the 20th, and thence over the upper Saint Lawrence valley to the New England coast. It was followed quickly by an area of high pressure, which caused strong northerly winds and a decided fall of temperature in the west quadrants of this storm when it was central off the New England coast.

VII.—This area of low pressure also appeared north of Montana, and probably it originated to the west of the Pacific coast. It moved eastward to Manitoba, where it was central on the morning of the 22d, while a second disturbance was apparently advancing from the Pacific coast, causing general rains at stations west of the Rocky Mountains. An area of high pressure appeared over British Columbia and moved to the southeastward, while another area of high pressure covered the greater portion of the United States east of the Mississippi; between these high areas an extended barometric trough was formed, within which developed areas of low pressure traced as numbers vii and viii. On the afternoon of the 23d the centre of this disturbance was apparently north of Lake Superior, while a secondary disturbance developed in eastern Nebraska. The latter moved northeastward over the upper lake region as a feeble disturbance and disappeared to the northeastward during the 25th.

VIII.—This disturbance is traced on chart i as far to the westward as the central plateau region, but it probably originated to the west of the Pacific coast line. General rains prevailed in California during the 21st and 22d, the rainfall being unusually heavy in southern part of that state. The rains continued in California on the 23d after the centre had passed to the eastward of Nevada. The approach of an area of high pressure from the north apparently forced this disturbance to the southeastward, and it covered central Texas on the morning of the 25th, attended by heavy local rains. At this point the direction of movement changed to the northeast and it crossed the Mississippi Valley near Keokuk, Iowa, followed by a cold wave which extended southward to Texas and over the Lake region and central valleys. General rains occurred in the eastern portion of the United States, and rain and snow in the Lake region and Ohio Valley, while the centre of disturbance passed northeastward over the upper lake region. After leaving the Lake region the disturbance inclined towards the Saint Lawrence Valley and its energy increased with the easterly movement, the minimum pressure, 28.76, occurring on the morning of the 28th at Bird Rocks, Gulf of Saint Lawrence, and strong southwesterly gales were reported in the Maritime Provinces.

NORTH ATLANTIC STORMS FOR DECEMBER, 1888 (pressure in inches and millimetres; wind-force by Beaufort scale).

These paths have been determined from international simulsailing vessels, received through the co-operation of the Hydro-Weather Service.

eastward from the American continent; one first appeared moved from the Gulf of Mexico northeastward off the coast of

The paths of the depressions that appeared over the north east of Newfoundland, and one apparently developed over mid-Atlantic Ocean during December, 1888, are shown on chart i. ocean, near the fiftieth parallel. The depressions generally pursued normal east to northeast paths, the exceptions being taneous observations by captains of ocean steamships and number 3, which moved east-southeast from Nova Scotia over the Azores; number 7, which advanced somewhat south of east graphic Office, Navy Department, and the "New York Herald after passing the thirtieth meridian, and number 6, whose path apparently described a loop over mid-ocean. From the Nine depressions have been traced, of which seven passed 9th to the 13th a depression, which is traced as low area iii,

the United States to the Gulf of Saint Lawrence, attended to the west or southwest and united with number 7. The from the 10th to the 12th, inclusive, by severe storms. On the 12th the pressure fell below 28.80 (731) over central and eastern Nova Scotia. A notable feature of the month was the storm which moved east-southeast over the Azores during the first decade. The storm-track charts of preceding years show that severe storms are not unusual in that region during the depressions over the ocean near the Azores caused abnormally low mean pressure in that locality.

Grand Banks; one occupied the ocean between the British Isles and Iceland during the 1st and 2d; two originated to the westward of the Azores; two moved northwest from the region east of the Windward Islands, and one was given a probable westward track over the Caribbean Sea. The depressions generally pursued normal east to northeast paths. The month did not present abnormal meteorological features over the Atlantic in the middle and northern latitudes, while over the southern part of the ocean the severe storms of the first decade constituted a noteworthy departure from the usual

winter weather in that region. In December, 1888, the number of depressions traced was one less than the average number traced for December during the past four years. Over the western portion of the ocean the weather continued stormy from the 1st to the 8th, inclusive. From the 11th to the 14th severe storms attended the passage of low area iii; from the 17th to the 19th gales prevailed off the coast of the United States with the passage of low area v, and during the 22d and 28th gales of moderate strength were occasioned by depressions which passed eastward over Newfoundland. Over mid-ocean stormy weather was almost continuous during the month, the severest disturbances being encountered on the 4th, 9th, 18th, and 20th, when the barometric pressure fell below 29.00 (737). Over the eastern part of the ocean the principal storm periods extended from the 1st to the 7th, and from the 19th to the 27th, the severest storms occurring on the 21st and 22d, when the barometric pressure fell below 29.00 (737) over portions of the British Isles.

The following are brief descriptions of the depressions traced: 1.—This depression was central on the morning of the 1st over Newfoundland, whence it moved rapidly north of east and disappeared north of the British Isles after the 3d, attended throughout by moderate to fresh gales.

2.—This depression appeared northeast of the Banks of Newfoundland on the 3d, and by the 7th had advanced to the British Isles, its passage being attended by strong to whole gales; from the 3d to the 5th, inclusive, barometric pressure

falling below 29.00 (737) was reported near its centre.

3.—This depression advanced from Nova Scotia, where it was central on the afternoon of the 4th, to the eastward of the Azores by the 7th, after which date the position of its centre cannot be determined. The storm, while possessing fair energy, was remarkable chiefly on account of the path it pursued.

-This depression was a continuation of low area i. and advanced from southwest of Nova Scotia, where it was central on the morning of the 6th, to mid-ocean in about latitude N. 55°, where it disappeared after the 10th. This depression exhibited great energy from the 7th to the 9th, inclusive, and during the 8th and 9th had barometric pressure falling below 29.00 (737).

5.—This depression was apparently a subsidiary development to number 4, and is located in about latitude N. 50°, longitude W. 30°, under date of the 11th, when strong to whole gales prevailed over mid-ocean. From this position the storm probably passed eastward, reports will not, however, admit of locating its centre after the 11th.

6.—This depression passed eastward from the south Atlantic coast of the United States during the 13th, and moved northeastward to mid-ocean by the 16th, where it pursued an irregular course until the 19th, after which it apparently recurved from the westward was shown, except on the 26th and 27th,

depression augmented in energy while central over mid-ocean, where it occasioned fresh to whole gales. On the 16th the barometer readings were high over the British Isles and adjacent waters, after which there was a gradual diminution in pressure in that region.

7.—This depression was a continuation of low area v, and winter months, and that in December, 1887, the passage of advanced rapidly eastward from Newfoundland, where it was central on the night of the 18th, to the British Isles by the 21st, attended throughout by storms of marked violence and In December, 1887, thirteen depressions were traced, of very low barometric pressure. Subsequent to the 21st the which seven advanced eastward from Newfoundland or the weather continued stormy over and near the British Isles, which conditions were doubtless largely due to the presence of this depression in that region.

8.—This depression was a continuation of low area vi, and passing rapidly east-northeast from Newfoundland during the 22d, disappeared northwest of the British Isles after the 23d, attended throughout by gales of considerable strength.

9.—This depression was a continuation of low area viii, and advanced from the Gulf of Saint Lawrence where it was central on the 28th, northeastward to the fifty-fifth parallel by the 29th, after which it disappeared north of the region of observation without evidence of marked energy.

OCEAN ICE IN DECEMBER.

No Arctic ice was reported during the month. In December, 1887, a small berg was observed in N. 46° 10′, W. 47° 28′, on the 26th, and a small berg in N. 48° 20′, W. 48° 40′, on the 28th. In December, 1886, no icebergs were reported. In December, 1885, several bergs were observed off the Newfoundland coast during the latter part of the month. For December of 1882, 1883, and 1884 no icebergs were reported.

FOG IN DECEMBER.

The following are limits of fog-areas on the north Atlantic Ocean during December, 1888, as reported by shipmasters:

Date.	E	int	ered.			Cle	eared.		Date.		En	tered.		Cle	eared.
Dave.	Lat.	48 42 46 57 48 39 47 53 44 50 49 10 46 02 46 04	w.	Date.	Lat	. N.	Lon.	w.	Lat. N.	Lon. W.					
	0 /		0	,	0	,	0	,	-	0	,	0	,	0 /	0 ,
1-2	48 41	2	46	57	48	39	47	52	27	39	34	73	56	39 36	73 55
7	44 50)					46	04	27	43	32	59	34	43 16	60 36
12	45 31	9	49			26	49	38	27	40	48	69	23	40 35	70 10
13	44 00)	55		43	57	55	47	27	37	45	75	15	37 30	75 25
12	43 00)	63	00	43	30	64	20	27	46	48	47	03	46 40	47 39
17	39 49	9	73 58	55	40	15	73	35	27 28	44	59	52	33	44 36	53 46
	45 30			20	45	05	59		25	46	41	48	IO	45 50	51 20
19	46 19		46	54	46	14	47	17	28	4.3	24	57	42	42 52	59 24
22	46 15		48	45	45	41	43	02	28	46	IO	48	30	45 50	49 00
22	45 19		53	19		06	54	06	26		29	61	26	42 45	64 30
26	46 43	3	46	55	46	23	48	07	28	38	49	73	30	39 01	73 34

The limits of fog-belts to the westward of the fortieth meridian are shown on chart i by dotted shading. In the vicinity of the Banks of Newfoundland fog was reported on nine days, as compared with six days for November, 1888, and fifteen days for December, 1887. Between the fifty-fifth and sixtyfifth meridians fog was reported for a total of four days, as compared with seven days in November, 1888, and three days for December, 1887. To the westward of the sixty-fifth meridian fog was reported on three days, as compared with seven days for November, 1888, and two days for December, 1887. From the above it will be seen that when compared with December, 1887, there was a marked deficiency in the fog banks reported over, or near, the Grand Banks, while over the ocean to the westward slight changes in the aggregate number of foggy days are shown. As compared with November, 1888, there was an increase in the number of fog-areas reported near Newfoundland, while to the westward of that region they were less frequently encountered than in the preceding month. The southern limits were somewhat more extended in November than in the current month.

On the several days for which fog was reported near Newfoundland the passage or approach of an area of low pressure prevailed in that locality. In instances areas of low pressure the passage of an area of low pressure over the valley and Gulf passed eastward from the American continent attending of Saint Lawrence on the 27th and 28th; on the 17th a storm whose advance no fog has been reported. Between the tifty-fifth and sixty-fifth meridians the development of fog attended tic states and a dense fog was reported off the coast south of the presence to the northward or northwestward of areas of Sandy Hook.

when relatively high barometric pressure and variable winds low pressure. Off the coast of the United States fog attended

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

and Canada for December, 1888, is exhibited on chart ii by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperatures and the departures from the normal are given for stations of the Signal Service. The figures oppo. site the names of the geographical districts in the columns for mean temperature show the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above.

The mean temperature was highest over southern Florida, where a reading of 67°.1 was noted at Key West. Values rising above 55° were reported over Florida, south of the thirtieth parallel, along the coast of Texas, in the lower Rio Grande valley, along the south coast of California, in the extreme southwestern part of Arizona, and at stations near the west-central coast of California. The lowest mean temperature occurred in Manitoba, where it ranged to 12° at Fort Values falling below 20° were reported over northern New Brunswick, in the lower Saint Lawrence valley, northern Ontario, northern Minnesota and Dakota, and northeastern The mean temperature also ranged below 20° at Montana. stations in southwestern Wyoming, northwestern Colorado, and the extreme northeastern part of Utah.

The mean temperature was above the normal over a greater portion of the country, the greatest departures above the normal being noted in Montana and Dakota, where, at stations, they amounted to more than 15°. From this region they become gradually less marked eastward to the Canadian Maritime Provinces, southward to the Rio Grande Valley and the Gulf of Mexico, and westward to the Pacific coast. The mean temperature was slightly below the normal within an area extending from southeastern Arizona and southwestern New Mexico northwestward to north-central California, while to the southward of a line traced from the coast of Virginia southwestward to the Gulf coast between New Orleans, La., and Galveston, Tex., the departures below the normal gradually increased southward to the southern extremity of Florida, where they amounted to more than 4°.

The following are some of the most marked departures from the normal at the older established Signal Service stations:

Above normal.		Below normal.	
Poplar River, Mont	15.4 13.3 13.2 10.2	Key West, Fla	3-4

MAXIMUM AND MINIMUM TEMPERATURES.

The highest temperatures for the month were reported in the lower Rio Grande valley, where they rose above 80°. Values above 75° were noted over the southern half of Florida, at several points in Texas south of the thirtieth parallel, at Yuma, Ariz., and Los Angeles, Cal. At Des Moines, Iowa, Saint Paul, Minn., Yankton, Dak., Boisé City, Idaho, and

The distribution of mean temperature over the United States | The most notable deficiencies occurred in the middle Atlantic, south Atlantic, and west Gulf states, in the Ohio and upper Mississippi valleys, the upper lake region, the southern plateau and southeastern slope of the Rocky Mountains, where, at stations, the maximum temperatures were 10°, or more below the maximum values for the corresponding month of

The lowest temperatures were reported in northwestern Minnesota, central Montana, southern Wyoming, and north-eastern Utah, where they fell below -10°, the lowest reading, -16°, being noted at Saint Vincent, Minn. The minimum temperatures fell below zero in northern New England and northern New York, and north of a line traced from northeastern Minnesota southwestward into Colorado, and northeastern Montana. They thence irregularly northwestward to western Montana. were below 32°, except in Florida south of the twenty-eighth parallel, along and near the west Gulf coast, in western California, and along the immediate north Pacific coast. Unusually low temperatures have not been reported, and at a large majority of stations they were considerably above the lowest readings previously noted for December, notably in the upper Mississippi and upper Missouri valleys, the upper Lake region, and the middle-eastern slope and the plateau regions of the Rocky Mountains, where, at stations, the minimum readings were more than 30° above the December records of previous years.

RANGES OF TEMPERATURE.

The monthly and the greatest and least daily ranges of temperature at Signal Service stations are given in the table of miscellaneous meteorological data. The greatest monthly ranges occurred over southwestern Dakota, northeastern Montana, and the intermediate territory, where they exceeded 70°. From this region the ranges gradually decreased westward to the Pacific coast, where they amounted to less than 20° at the mouth of the Columbia River, southward to the Gulf coast, where they were less than 35° near Galveston, Tex., and eastward to Michigan, where they were less than 35° along the east coast of Lake Michigan. From this locality they increased to more than 55° over northern New England, from whence they decreased somewhat irregularly to southern Florida, where a range of less than 30° was noted at Key West. Along the Pacific coast the monthly ranges varied from less than 20° over the southwestern part of Washington Territory, to more than 35° in the vicinity of Los Angeles, Cal.

The following are some of the extreme monthly ranges:

Greatest.		Least.	
Poplar River, Mont	72.5 72.4 59.5	Fort Canby, Wash San Francisco, Cal Red Bluff, Cal Key West, Fla San Diego, Cal Grand Haven, Mich	19.0 21.6 25.0 27.2 29.0 33.6

DEVIATIONS FROM NORMAL TEMPERATURES.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been Roseburgh, Oreg., the maximum temperatures were higher than computed; (3) the mean temperature for December, 1888; (4) for any preceding December during the periods of observation. the departure of the current month from the normal; (5) and the extreme monthly means for December during the period of observation and the years of occurrence:

		for the	ofrecord	r Dec.,	re from	(5) tem	Extreme perature	monthl for Dece	y mean
State and Station.	County.	(r) Normal formonth of	(a) Length o	(3) Mean for 1888.	(4) Departure f	Highest.	Year.	Lowest.	Year.
Arkaneas. Lead Hill California.	Boone	o 36-8	Years 7	59-6	+2.8	44-5	1881	o 29-1	188
Bacramento	Sacramento .	47-0	36	46-2	-0.8	51.0	1861	39-5	187
Fort Lyon	Eent	27.9	21	34-9	+7.0	39-6	1867	17-7	187
Connecticut. Middletown	Middlesex	28-3	30	31.7	+3-4	33-2	1865	21-8	187
Fort Randall	Todd	20-4	31	27.7	+7.3	31.6	1881	3-5	188
Florida. Merritt's Island .	Brevard	61.9	5	59-5	-2.4	64-9	1884	58.0	188
Georgia. Forsyth	Monroe	48.8	14	49-3	+0.5	56-7	1879	39-8	187
Rlinois. Peoria	Peoria McHenry	28-7	33 32	34-2 27-9	+5·5 +5·7	44·3 37·7	1877 1877	18-5	1870
Indiana. Vevay	Switzerland .	34-2	23	37-4	+3-4	44-8	1877	24-6	187
Iosea. Cresco	Howard	15-9	17	23-9	+8.0	34-0	1877	4-5 8-1	1876
Monticello Logan	Harrison	21.4	34 14	31.5	+8.0 +7.2 +7.4	39-5	1877	8.1	1859
Lawrence Wellington	Douglas	29-5	31	34.8	†5·3 †9·4	44-4	1877 1888	19-8 23-1	1872
Couisiana. Grand Coteau		52-7	6	53.6	+0.9	57-7	1884	51.8	1887
Mains. Gardiner			48		+5-7	31.6	1881	13-9	1859
Maryland. Cumberland		31.5	29		+2.1	40.0	1877	24-8	1860
Massachusetts.	Hampshire		52	31.9	+4.9	36-0	1881	19-5	1872
Somerset	Bristol	30-0	15	33.2	‡4.9 ‡2.9 ‡3.2	36.5	1881	21.8	1856
Kalamazoo	Kalamazoo Lapeer	26.7 26.6	12 11	31.8 30.8	‡5. I	38.2 31.0	1877 1881	19.8	1886
Minneapolis	Hennepin	14-3	24	23.6	+9-3	31.6	1877	1.9	1872
Fort Shaw	Lewis a Clarke	24-9	20	34.8	+9.9	39.7	1875	2.2	1884
Concord	Merrimack	25.2	26	29-9	+4.7	33.0	1829	12.8	1831
Moorestown South Orange	Burlington Essex	32.2	25 18	34·3 32·4	‡2.1 10.8	39.8 37.7	1881 1881	23.9	1876
New York. Cooperstown Palermo	Otsego	27·1 24·8	34 35	27.6 29.1	+0.5 +4.3	33-1 32-1	1881 1881	14-7	1876
North Carolina. Lenoir	Caldwell	-	16	37-1	-0-5	44-3	1879	39- I	1876
Ohio. N'th Lewisburgh. Wauseon		29.8	56 18		+3.6 +4.9	41.0	1877 '83	19.0	1876
- Oregon.	Linn						1886	17-4	1884
Albany Eola	Polk	39.5	9	43.2	‡3·4 +3·7	49-5	1886	30-7	1884
Dyberry	Wayne		24	27.8	+2.7	32.8	1881	17-3	1876
Wellsborough	Clearfield Tioga	25-1	9	29-1	+3.7 +4.0 +0.1	37.0	1881	16.0	1876 1880
South Carolina. Statesburgh Tennessee.	Sumter		7	44-5	-2-4	51.3	1883	43.6	1882
Austin	Wilson	39.8	18	39.8	+0.6	49-4 42-1	1879	25·0 34·2	1876 1886
Fort Concho New Ulm	Tom Green Austin	45.6 53.6	16	52-1 54-8	+6.5	52-1	1888 1875	39-1 46-1	1876 1876
Vermont. Strafford	Orange	21-5	15	25.6	+4-1	29-5	1881	13-5	1876
Virginia. Bird's Nest Wytheville	Northampt'n Wythe	41.2 34.9	20 24	38.9 35.1	-2.3 +0.2	51-1 42-0	1879 1879	32.7 26.0	1876 1876
West Virginia. Helvetia	Randolph		11	35.2		42-5	1879	24.6	1880
Wisconsin. Madison	Dane	22.2	25	28-4	+6.2	38-7	1877	11-1	1876
Washington. Fort Townsend	Jefferson	41.0	15	44.0	+3.0	45-3	1885	33.0	1884

FROST

As compared with the preceding month the southern limit of frost in Florida has changed but slightly, no frost being reported south of the northern portion of Lee County. Along the middle and eastern Gulf coast frost was more frequently reported in November than during the current month. In Texas frost was reported as far south as Rio Grande City in November, while in December the frost limit was apparently considerably to the northward of that locality.

Alva, Lee Co., Fla.: the heavy frost on the mornings of the 21st and 22d destroyed all tender vegetation.—Report of voluntary observer.

Auburn, Ala.: the weather was generally cool enough to produce light frosts and thin ice frequently during the month.

—Alabama State Weather Service Report.

University, Miss.: frosts mostly light, were reported frequently throughout the northern and southern parts of the state.—Mississippi State Weather Service Report.

New Orleans, La.: the first killing frost, with ice formation,

New Orleans, La.: the first killing frost, with ice formation, occurred in the southern parishes on the 20th.—Report of Louisiana State Weather Service.

Table of comparative maximum and minimum temperatures for December.

State or Terri-		For	1888-	Since	establish	ment o	f station.	th of
tory.	Stations.	Max.	Min.	Max.	Year.	Min.	Year.	Length record.
		0	0		1	0		Y'rs.
Alabama	Mobile	72-7	25-0	78.8	1884	14-0	1880	18
Do	Montgomery	69.0	24-2	77-1	1884	8.0		17
Arisona	Whipple B'ks	57.8	18-3	70.0	1881	-18.0		13
Do	Fort Apache	68-7	18-4	70-0	1881, 1882	- 8.0	1884	II
Arkansas Do	Fort Smith	67.5	21-5	78-1	1883	7.7	1886	7
California	Little Rock San Francisco	64.7	23-0 43-I	74.0	1880, 1883	34-0		18
Do	San Diego	73.0	44-0	82.0	1874	32.0	1879	18
Colorado	Denver	67.5	7-3	74-1	1885	-25.0	1876	18
Do	Montrose	46- I	9.0	55-3		-16.2		4
Connecticut	New Haven New London Fort Buford	54-2	5.0	65-5	1887	- 9-5	1884	17
Do	New London	53-2	9-3	60-5	1879	- 7.5	1883	17
Dakota	Fort Buford	58.3	- 9.3 5.8	59-3	1885	-46.0	1879	10
Do	Yankton	65-2	5-8	62.0	1875	-34.0		16
	WashingtonCity	00.0	16.2	73.0 81.0	1873	-13.0		19
Florida		73.6	27.5 51.6	81.0	1875	19.0		18
Do	Key West	78.8	51.6	88-0	1876	44-0	1876	19
Georgia	Atlanta	63.0	20.9	71.0	1879	1.0	1880	II
Do	Savannah		25.0	80.0	1875	15.0	1580	18
Idaho	Boisé City	61.9	10.0	60-5	1885	7.3	1884	13
Illinois	Chicago	61.9	19.9	72.0 68.0	1875	- 7.0	1872	17
Do Indiana	Chicago Indianapolis	56-0	17-4	68.0	1875	-23.0 -15.0	1876	17
Indian Ter	Fort Sill	69.3	30.2	77.0	1880	2.0		
Iowa	Dubuque	58.0	8.0	64.0	1877	-23-5	1886	16
Do		60.3	11.0	57.0	1883	-19.5	1886	11
Kansas	Dodge City	70-4		73.0	1875	-15.0	1876	
Do	Leavenworth	63.0	9.6	72.0	1875	-14.0	1880	15 18
Kentucky	Louisville	62.0	18-0	74.0	1875	- 7.0	1980	17
Louisiana	New Orleans	72.3	30-7	78.0	71,75,79,80		1870, 1880	19
Do	Shreveport	74-4	26.5	79.0	1875	10-0	1880	16
Maine	Eastport	51.7	- 3.1	54-0	1877	-21.0	1884	16
Do	Portland		2.5	59-0	1884	-17-0	1872	17
Maryland	Baltimore	58-5	16-5	71.0		- 3.0	1880	17
Massachusetts .	Boston	60-5	5.3	66-0	1881	-12.0	1883	18
Michigan	Marquette	46.6	10-5	59-0	1875	-20.0	1880	15
Do	Grand Haven	50-0	16.6	61.0	1877	-12.0	z884	16
Minnesota	Saint Vincent Saint Paul	42.6 58.1		44-8		-47.8	1884	9
Do	Vicksburg		5-0	79.0	1877	-39.0 12.0	1879	
Mississippi Missouri	Saint Louis	70-2 59-0	20.6	74.0	1873, 1875	-17.0	1872	17
Montana	Ft. Assinaboine.	60-9	- 8.4	67.0	1875 1885	-50.0	1884	0
Do	Helena	53.0	-34-0	67.9 56.8	1885	-40.0	1880	9
Nebraska	North Platte	53.0	- 2.9	69.0	1885	-27.0	1879	15
Do	Omaha	65.8	9.6	66.0	1875	-17.0		16
Nevada	Winnemucea	57 - 7	11.0	65.0	1878	- 20.0	1879	10
New Jersey	Atlantic City	53.0	11.8	64.0	1877	- 7.0	1880	16
New Mexico	Santa Fé	52.5	15.5	65.0	1878	-13.0	1879	16
New York	Buffalo	55-2	15.5 3.8 8.8	62.0	1875	- 9.0	1880	16
Do	New York City	56.3		66-2	1881	- 6.0	1880	19
North Carolina.	Charlotte	68-5	20.2	71.0		- 5.0	1880	22
Do	Wilmington	67.7	25.8	78-0	1879	10-0	1880	18
Ohio	Cincinnati	62.0	16.2	72.0	1875	- 8.0	1872	19
Do	Sandusky	61.0	15-0	63.0	1879 1886	-13.0	1880	12
Dregon	Portland	59.0	30.8	65.4	1886	3.0	1879	16
Donnaul ramia	Roseburgh	62-1	31.8	65.8	1885	7.0	1879	12
Pennsylvania	Pittsburgh Philadelphia	61-2	12.0	70.0		- 5.0	1880	18
Do Rhode Island	Block Island	54-3	9-5	60.0	1873	- 3.2	1884	9
South Carolina .	Charleston	67.6	27.9	76.0	1881	13.0	1880	16
lennessee	Knoxville	59.8	21.5	75.0	1874	- 5.0	1880	18
Do	Memphis	66-4	22.9	74.0	1875	3.0	1876, 1880	16
Cexas	Brownsville	78.0	41.0	92.2	1885	3.0	1880	13
Do	Fort Elliott	72.0	19.4	83.0	1880	-10.0	1879	10
Jtah	Salt Lake City	57.0	9.0	61.0	1874	-10.0	1879	15
Virginia	Lynchburgh	62.7	17.2	73-0	1873	- 5.0	1880	16
Do	Norfolk	66-3	20-1		73,74,75,79	6.0	1880	18
Do Washington	Norfolk Spokane Falls	50-5	13.9	57.2	1886	-17.8	1884	8
DO	Olympia	57.0	20-0	64.2	1885	-17.8 8.0	1879, 1884	13
Wisconsin	La Crosse	56.0	2.5 12.8	60.0	1877	-37.0	1872	17
Do	Milwaukee	52.0		63.0	1877	-21.6	1884	19
Wyoming	Cheyenne	61.0	2.5	64-2	1885	-24.0	1879, 1880	16

LIMITS OF FREEZING WEATHER.

On chart v are shown the southern and western limits of freezing weather for December, 1888. A line representing the southern limit is traced from Titusville, Fla., westward over the northern Gulf to Louisiana between New Orleans and Port Eads, and thence into central Texas, where it trends south-

ward into the Rio Grande Valley, somewhat to the westward of Rio Grande City. A line showing the western limit is traced from southeastern Arizona northwestward over central California, and thence northward near the coasts of Oregon and Washington Territory, there being a gradual increase of distance from the coast line from Washington Territory southward to northern California.

TEMPERATURE OF WATER.

The following table shows the maximum, minimum, and mean water temperature as observed at the harbors of the several stations; the monthly range of water temperature; and the mean temperature of the air for December, 1888:

	7	Mean tem-			
Stations.	Max.	Min.	Range.	Monthly mean.	of air at the sta- tion.
		0	0	0	
Canby, Fort, WaahCedar Keys, Fla(1)	50-2	43.0	7-2	47.5	47-4
Charleston, S. C	54-0	48-0	6.0	51.5	47-2
Eastport, Me	44-9	39-5	5-4	42.3	28.4
Salveston, Tex	63.0	53-5	9-5	57.9	56.6
Key West, Fla	73-8	62-3	11-5	68.5	67.1
New York City	42.8	32-5	10-3	37.8	34-4
Pensacola, Fla	65.0	54-0	II.O	59.6	50-4
Portland, Oregon	48.0	39.0	9.0	45-3	43

(1) Report not received.

PRECIPITATION (expressed in inches and hundredths).

Canada for December, 1888, as determined from the reports ing the period of observation and the years of occurrence: of nearly 1,500 stations, is exhibited on chart iii. In the table of miscellaneous meteorological data are given, for each Signal Service station, the total precipitation, with the departure from the normal. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

The precipitation for December, 1888, was above the normal in California, the southern plateau region, over an area extending from central Texas northward to the lower Missouri valley, in portions of the upper lake region and upper Mississippi valley, southern Florida, northern part of the middle Atlantic states, in New England (with exception of a small area along the southern coast), and in the Maritime Provinces. In other portions of the United States and Canada the precipitation was below the normal. The most noteworthy features of this month's precipitation were the large excess in southern Florida, the lower Missouri valley, California, and southern plateau, and the marked deficiency in the extreme northwest, Ohio valley and Tennessee, lower lake region, and lower Rio Grande valley. In southern Florida the rainfall was about three times the December normal, and in California, the southern plateau, and lower Missouri valley it exceeded the normal by from 30 to 70 per cent. In the extreme north-west, where the normal December rainfall is very small, about 0.75, only about one-fourth of that amount fell this month. In the lower Rio Grande valley, lower lake region, Ohio valley and Tennessee the precipitation was about one-half of the normal, and in the following-named districts it ranged from 30 to 35 per cent. below the normal: east Gulf states, northern and southern Rocky Mountain slopes, northern plateau, and north Pacific coast. It ranged from 85 to 90 per cent. of the normal in the middle and south Atlantic states and central Rocky Mountain slope; and in the upper lake region the deficiency amounted to about 5 per cent. While an average determined from all Signal Service stations in New England shows a slight deficiency as compared with the normal, there was a small but general excess over much the larger portion of that district, the slight deficiency shown in the table being due to the very small precipitation which occurred at a few stations along the southern coast.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for a series of years; (2) the length of record during which the observations have been taken, and from which the average has been computed; (3) the total precipitation for December, 1888; (4) the departure of the current month from the average;

The distribution of precipitation over the United States and (5) and the extreme monthly precipitation for December dur

	:119	for the	ofrecord	r Dec.,	re from	(5) Ex	tremen tion for	Decemb	precip
State and station.	County.	Average month of	Lengtho	Total for 1888.	Separture average;	Gre	atest.	Lon	st.
		(3)	(a) I	3	3	Am't.	Year.	Am't.	Year.
Arkansas. Lead Hill California.	Boone	Inches 4-16	Fears	Inches 2-31	Inches. -1.85	Inches	1884	Inches.	1886
Sacramento Colorado.	Sacramento .	4-44	39	5-88	+1-44	13-41	1852	0-00	1850
Fort Lyon Connecticut.	Bent	0-24	12	trace.	-0.24	1.20	1883	0-00	1868
Middletown	Middlesex	3-72	28	5-55	+1.83	7-91	1878	1-20	1875
Fort Randall	Todd	0.86	30	0-66	-0.20	4.75	1877	0-00	1864
Merritt's Island . Georgia.	Brevard	2.61	11	8-55	+5-94	8-55	1868	0-46	1883
Forsyth	Monroe	4-77	14	4-58	-0.19	7.56	1887	2-35	1877
Peoria	Peoria McHenry	2-48 2-01	33 26	2.30	-0.09 -0.14	7-15 5-67	1873	0.28 0.28	1876
Logansport Vevay	Cass Switzerland .	3.56 4.03	12 23	(†)"	(†) -2-87	5.99 7.60	1881	0.00	1888
Cresco	Howard	1.32	17	2.20	+0-88	2.83	1879	0-30	1874
Monticello Logan	Jones Harrison	2-44 1-31	33	2.26 1.86	-0.18 +0.55	3.30	1856 1882	0.65	1867
Kansas. Lawrence Wellington Louisiana.	Douglas Sumner	1.70	24 9	1.78	+0.08 -0.21	4-39	1873 1884	0-19	1876 1862 1886
Grand Coteau	St. Landry	6.59	5	4-03	-2.56	14-43	1884	2.70	1885
Gardiner Maryland.	Kennebec	3-76	48	4-20	+0.44	7-55	1878	0.68	1838
Cumberland	Allegany	2-17	17	1-53	-0.64	4-50	1881	0.70	1871
Amherst	Hampshire		53	4.29	+0.71	7.09	1839	0-96	1838
Newburyport Somerset Michigan.	Essex Bristol	3.75	15	4-76	10.67	5.67	1852 1884	0.25	1875
Kalamazoo Thornville	Kalamazoo Lapeer	3-15	12	1.65	-1.21 -1.09	7-14 5-25	1884 1879	1.65	1880
Minnesota, Minneapolis	Hennepin		21	0.61	-1.01	5-30	1873	0-33	1866
Montana.	LewisaClarke	7700	18	0-48	-0.06	2.47	1884	0-00	1 1875
Fort Shaw New Hampshire. Concord	Merrimack	3-29	8	3-52	+0-23		1857, '84	1-55	1877
New Jersey. Moorestown	Burlington	3.21	25	2.69	-0-52	5-77	1865	0.90	1877
South Orange New York.	Essex	3.83	18	4-95	+1.13	7.07	1878	0.91	1877
Cooperatown Palermo North Carolina.	Otsego	2-57	34 34	3-30	+0.73	6-02 7-95	1881	0.97	1877
North Carolina. LenoirOhio.	Caldwell	4.09	14	2.70	-1.39	8-70	1877	1.60	{ 1874 1883
N. Lewisburgh	Champaign	3.01	16	1.85	-1.16	5-45	1873	1.50	1882
Wauseon Oregon.	Fulton		16	1-88	-0.51	4-32	1879	0.41	1874
Albany Eola Pennsylvania.	Linn Polk	8-72 6-58	16	4-28	-4·44 -3·99	14-21	1887 1880	4·28 0·84	1888
Dyberry	Wayne	2.60	19	3-40	+0.80	5-08	1878	0.95	1874
Grampian Hills Wellsborough	Clearfield Tioga	3-68	18	2.89 5.91	-0.79 +1.21	5-12	1872	1.99	1871
South Carolina. Statesburgh	Sumter		7	3.98	+0.58	5.87	1884	1.26	1883
Tennessee.	Wilson		18		-3.04	3.00	1879	0.85	1882
Austin	Gibson	3-97	5	1.57	-1.97	7-25	1884	2.00	1888

Deviations from average precipitation-Continued.

	for the Dec.	record.	r Dec.,	e from	(5) Ext	reme m	onthly p	er.
County.	erage	gth of	(60)	partur	Gree	test.	st. Lea	
	(I) Av	(2) Len	(3) To	(4) De	Am't.	Year.	Am't.	Year.
	Inches	Years	Inches	Inches.	Inches		Inches.	
Tom Green	1-40	15	0.40	-1.00	4-80	1874	0-00	1873
Austin	4-61	17	4-52	-0.09	16.43	1875	0-44	1880
Orange	3.26	15	3-50	+0.24	5.90	1878	0-15	1875
Northampton	3.87	19	2-15	-1.72	6-75	1880	1.70	1876
Wythe	2.96	23	2.30	-0.66	6-00	1871	0-20	1861
Randolph	5-46	11	3-05	-2-41	13-27	1882	1.86	1876
Dane	1.98	20	1-57	-0.41	5-73	1884	0-45	1974
Jefferson	2-46	17	2.78	+0-30	6. 18	1880	0.67	1874
	Tom Green Austin Orange Northampton Wythe Randolph	County. For County. Inches 1.40 Austin 3.26 Northampton Wythe 2.96 Randolph 5-46 Dane 1.98	County. Solution County County	County. 2 2 2 2 2 2 2 2 2	County. 20 20 20 20 20 20 20 2	County. 20 20 20 20 20 20 20 2	County. 2 2 2 2 2 2 2 2 2	County. 2 2 2 2 2 2 2 2 2

† Report not received.

NORMAL RAINFALL FOR MICHIGAN.

The Chief Signal Officer has received from Sergeant N. B. Conger, Signal Corps, in charge of the Michigan Weather Service (central station, Lansing), an annual normal rain chart for that state. The chart in question is based upon observations of thirteen years, and a very large number of reports have been used in its preparation. It shows that the normal rainfall for the state is, in general, between thirty and forty inches, and, with the exception of a few small areas, is, as might be expected, greatest over the western portion of the lower peninsula.

Hail is reported to have fallen as follows:

1st, Mass. 3d, La., Mich. 11th, Me., N. Y. 12th, Ala. 14th, Ariz. 15th, Ariz., Mich., Ohio, Tex., Wis. 16th, Pa. 17th, Me., N. Y. 18th, Me., N. H. 21st, Ariz. 25th, Kans., La. 26th, Iowa. 27th, Cal., Pa. 29th, La., Tex. 31st, N. Y. SLEET.

Sleet occurred during December on the several dates as fol-Sleet occurred during December on the several dates as follows: 1st, N. Y. 2d, N. C. 3d, Mich., N. Y., Ohio. 4th, Mich. 5th, Wis. 6th, Ohio. 8th, N. Y. 11th and 12th, Me. 13th, Dak., Va. 14th, Ariz., Dak., Ill., Wis. 15th, Dak., Kans., Mich., Minn., Nebr., Ohio, Utah, Wis. 16th, Dak., Ill., Iowa. 17th, Ill., Me., N. Y. 18th, Ill., Me., N. H., Tenn. 20th, Colo. 23d, Dak. 24th, Colo., Minn., Mo., Nebr. 25th, Colo., Iowa, Kans., Mo. 26th, Ill., Iowa, Mich., Mo., Wis. 27th, N. Y., Wis. 28th, Ariz., Ind. 29th, Mich. 30th, Ark., Ill., Mich., Mo. 31st, Ind., Mich.

SNOW.

During December, as in the previous month, snow fell in some part of the country every day. On the 1st, 17th, 18th, 19th, and 28th it occurred in as many as from twenty to twentythree states or territories; and on the 2d, 3d, 8th, 10th, and 22d in but from three to eight states or territories. In Michigan snow was reported on every day during the month, with the exception of the 2d and 7th, and in New York there were but five days, viz., 10th, 23d, 24th, 25th, and 30th, on which snow did not fall, Pennsylvania and Ohio following next in order of frequency with twenty-three and twenty dates, respectively. East of the Rocky Mountains the 35th parallel is about the southern limit of snow for December.

MONTHLY SNOWFALLS (inches and tenths) IN DECEMBER.

Over portions of Iowa, Wisconsin, upper Michigan, western New York, northern New England, the central plateau, and central Rocky Mountain slope monthly snowfalls reaching the average. Over more than half the area of the country viz., Green Bay, Wis., 15; Elkader, Iowa, 14; and Marquette,

northward of the thirty-fifth parallel the monthly snowfalls were below four inches, and there are extensive areas in the extreme northwest and central valleys where they were below two inches. An extreme depth of 39 inches occurred at Summit, Cal.; other stations reporting 30 or more inches are: Emigrant Gap, Cal., 35, Marquette, Mich., 34.1, Wedgewood, N. Y., 30. As previously stated, the thirty-fifth parallel is the southern limit of snowfall eastward of the Rocky Mountains. Below are given all monthly snowfalls of ten inches or more,

and in states and territories where the maximum depth was below that amount, the station reporting the greatest is given: Alabama.—New Market, trace. Arizona.—Williams, 15. California.—Summit, 39; Emigrant Gap, 35; Truckee, 15. Colorado.—Glenwood Springs, 19.8; T. S. Ranch, 12; Ouray, 11.4. Connecticut.—New Hartford, 6. Dakota.—Fort Sully, 7.3. Idaho.—Boisé City, 2.8. Illinois.—Lake Forest, 4.5. Indiana.— Princeton, 4. Indian Territory.—Fort Supply, 5.6. Iowa.—Des Moines and Elkader, 15; Fayette, 14.2; Grinnell, 147; Osceola, 13; Clarinda, 11.2; Independence, 11.1; Monticello, 10.1; Cresco and Vinton, 10. Kansas.—Topeka, 7.4. Kentucky.— Lexington, 1.6. Maine.—Orono, 19.6; Calais, 10. Maryland.— Baltimore, Fallston, Frederick, and Woodstock, trace. chusetts.—Worcester, 6.5. Michigan.—Marquette, 34.1; Lathrop, 22.4; Manistee, 12.6; Gulliver Lake, 12.5; Bear Lake, 10.5; Fort Brady, 10.3. Minnesota.—Saint Vincent, 5.6. Mississippi.—Lake, trace. Missouri.—Mound City, 9.8. Monday, 10.3, Nebracka, Folla City, 7.6, Norada tana.—Sheldon, 9.3. Nebraska.—Falls City, 7.6. Nevada.—Pioche, 17; Toano, 14.2. New Hampshire.—West Milan, 14; Berlin Mills, 11.5. New Jersey.—Moorestown, 0.4. New Mexico.—Las Vegas, 4.5. New York.—Wedgewood, 30; Friendship, 29; Perry City, 27.8; Constableville, 25; Nineveh, 22; Humphrey, 20.1; South Canisteo, 20; Ithaca, 18.9; Angelica, 18; Utica, 17.2; Ilion, 16.8; Rochester, 15.5; Palermo, 15; Auburn, 14; Canton and Rose, 13.2; Eden, 12.4; Oswego, 11.6; Le Roy, 11.4; Waddington, 10?. North Carolina.—Greensborough, 4. Ohio.—Garrettsville, 5.6. Oregon.— Fort Klamath, 9.4. Pennsylvania.—Meadville a, 21.4; Eagle's Mere, 19.8; Troy, 167; Meadville b, 14.2; Wellsborough, 12.9; Tionesta, 12.5; Girardville, 11. Rhode Island.—Providence and Woonsocket, 1. South Carolina.—Cedar Spring, trace. Tennessee.—Greeneville, 3.6. Texas.—Fort Elliott, 5.3. Utah.— Fort Du Chesne, 9.5. Vermont.—East Berkshire, 22; Middlebury, 18.2; Strafford, 12; Coventry, 11.5; Burlington, 11; Lunenburgh, 10. Virginia.—Marion, 2.5. Washington Territory.—Fort Spokane, 5. West Virginia.—Middlebrook, 16?. Wisconsin.-Green Bay, 23.8; La Crosse, 12.3. Wyoming.-Fort Bridger, 5.8.

DEPTH OF SNOW REMAINING ON GROUND AT 15th AND CLOSE OF MONTH.

As the areas of country covered by snow on the 15th of December were of limited extent, being confined to portions of New England, lower lake region, and northern Minnesota, no chart showing the depths remaining at that date has been prepared. The regions over which the greatest quantity of snow remained on the 15th were western New York and portions of Vermont and New Hampshire, where it generally ranged from six to eight inches, a few stations reporting more than six inches, viz.: Humphrey, N. Y., about 12; West Milan, N. H., 8; Friendship, N. Y., 6 to 8; Angelica, N. Y., 6 to 7. In northern Minnesota there was a small area over which the depth of snow averaged about one inch.

On chart v are shown the portions of country covered by snow at the close of December. From the Lake region and upper Mississippi valley westward to the plateau region the country was generally covered with snow, but over the greater depths of ten inches or more occurred during December. In part the depths were less than two inches. In the central and some portions of the regions named depths ranging from 15 to 30 inches were reported, and in a few instances the latter figure six inches, and over a narrow area extending from central Iowa was exceeded, but upon the whole it appears that the snowfalls northeastward to Lake Superior there were generally from six of December, as was the case in November, were much below to ten inches, a few stations reporting depths exceeding ten, Mich., 12. In New England there was very little snow at the end of December and that reported was in the extreme northern portions. Only one station in New England reported a depth of more than two inches, viz., East Berkshire, Vt., 6. The snowfall of the winter of 1888–'89 to the close of December is probably the smallest that has occurred for a number of years.

EXCESSIVE PRECIPITATION.

Rainfalls of ten inches or more for the month of December in past years have been confined principally to the Pacific coast region. East of the Rocky Mountains comparatively few rainfalls have occurred that have reached or exceeded ten inches, and they have been confined mostly to the lower Mississippi valley and adjacent Gulf states, as has generally been the case for other months for which similar data has been discussed during the past year. It will be seen from the accompanying table of excessive precipitation that there is a large number of stations reporting rainfalls exceeding ten inches in California, Oregon, and Washington Territory, and especially in California, where, during the past decade of years, observations of temperature and rainfall have been extensively carried on by the Central and Southern Pacific railway systems. The amount of data given for California, if not earefully considered, may give an erroneous impression as to the frequency with which the ten inch limit is reached in that state during December, on account of the large number of places at which observations are made, there being in addition to regular Signal Service and voluntary stations in California more than one hundred points along the Central and Pacific railways where temperature and rainfall observations are regularly recorded. An examination of the records of a number of stations where the observations have been continuous for a considerable period seems to warrant the statement that over a large part of northern California December rainfalls reach ten inches or more about once in four years. In the lower portion of the state (south of latitude 37°) only a few such rainfalls are on record. The years in which these heavy rainfalls have occurred most extensively in California since 1870 are 1871 and 1880. In the latter year thirty-eight stations reported more than ten inches, and while during 1871 the number of stations was ten less, that fact does not justify the conclusion that these rains were more extensive in the latter than in the former year, as the number of observing stations was largely increased during the interval between the years mentioned. No rainfalls amounting to as much as ten inches were recorded in California from 1874 to 1878 (five years), nor in 1882 and 1883, and only one instance is recorded for each of the following years: 1870, 1881, 1886, 1887, and 1888. Along the coasts of Oregon and Washington Territory these large rainfalls occur more frequently than in northern California, and from the records covering several years of continuous observations it appears that they reach ten inches somewhat more frequently than they fall below that amount. At Astoria, Oregon, near the mouth of the Columbia River, where the record covers twenty-six years, there have been noted in that time nineteen December rainfalls exceeding ten inches; of that number nine exceeded fifteen inches, exceeded twenty-two inches, and in 1867 a maximum fall of 24.73 inches occurred. As stated above but few December rainfalls have reached ten inches east of the Rocky Mountains. At Vicksburg, Miss., where the period of observations, while not continuous, covers about thirty-five years, only four December rainfalls have exceeded ten inches, and the New Orleans record of forty-three years shows that no December rainfall has reached that amount. At a few stations near the Gulf coast from one to three of these excessive monthly fails have occurred during the periods covered by the observations. Of the four hundred and two instances in which December rainfalls of ten or more inches have been recorded within the United States one hundred and seventy-six occurred in California, sixty-five in Oregon, and fifty-two in Washington Territory, leaving but one hundred and nine for all other portions of the country. Of the total number of these excessive monthly

rainfalls it is observed that 69 per cent. range between ten and fifteen inches; 19 per cent. between fifteen and twenty inches; 6 per cent. between twenty and twenty-five inches; 3 per cent. between twenty-five and thirty inches, and 3 per cent. exceeded thirty inches. The following are the most remarkable falls for the Pacific coast region: Bowman's Gap, Cal., 46.57, (year not stated); Nevada City, Cal., 41.95, 1867; Pilarcitos, Cal., 41.87, 1871; Mount Hamilton, Cal., 33.84, 1884; Georgetown, Cal., 33.77, (year not stated); Emigrant Gap, Cal., 31.20, 1884; Neah Bay, Wash., 30.70, 1886; Meadow Valley, Cal., 30.35, 1866. East of the Rocky Mountains the only stations reporting amounts in excess of twenty inches are: Fort Clark, Tex., 23.03, 1857; Point Pleasant, La., 20.39, 1884; Paducah, Ky., 20.12, 1879.

While about three-fourths of all the excessive monthly rainfalls for December occurred in Washington Territory, Oregon, and California less than one-sixth of the daily falls amounting to 2.50 inches or more have occurred in the states and territory mentioned, this fact being due, as stated in the November Review, to the steady nature of the rains on the Pacific coast. At Olympia, Wash., five daily rainfalls of 2.50 or more have occurred in the past twelve years. To the southward of Olympia these rainfalls occur with somewhat less frequency, with the exception of the vicinity of Los Angeles, Cal., where the same number recorded at Olympia has occurred. Along the Atlantic coast, and from the Ohio and central Mississippi valleys southward to the Gulf are the regions where excessive daily rainfalls most commonly occur in this month. Point Pleasant, La., reports the greatest number, ten, between 1878 and 1884, but of that number five occurred in a single year, 1878. With the exception of Hatteras, N. C., where eight such rainfalls have been recorded since 1877, very few stations north of the thirty-fifth parallel have noted as many as four. Some of the most remarkable falls for twenty-four consecutive hours are the following: Clarksville, Tex., 8.50, 29-30th, 1874, and 8.50, 28-29th, 1876; Monroe, La., 12.15, 29-30th, 1884; Point Pleasant, La., 13.50, 19th, 1882; Yaquina Light-House, Oregon, 8.47, 5-6th, 1887.

Only twenty-six hourly rainfalls of one inch or more in December are on the records of the Signal Office, and of that number the following-named stations report two each: Los Angeles, Cal., Clarksville, Tex., Fort Barrancas, Fla., Indianapolis, Ind., and Knoxville, Tenn. The others occurred at widely distant stations east of the one-hundredth meridian.

Table showing for the month of November monthly rainfalls of 10 inches, or more (in states where monthly rainfalls did not reach 10 inches the station reporting the maximum amount is given); rainfalls of 2.50 inches, or more, in any 24 consecutive hours; and rainfalls equaling or exceeding one inch in one hour.

States and stations.	Rainfa inche more more	s, or per	inch	infall of es, or me 24 hours	ore, in	OX	nfall equaling or sceeding one inch			
ton the table to the table to the table to the table to t	Amt.	Year.	Amt.	Day.	Year.	Amt.	Time.	Day.	Year.	
Alabama.	Inches.		Inches		1	Inches	A. m.			
Auburn	13.84	1887	3-16	9	1882					
Carrollton			3.10	14	1884					
Do				8	1885	100000		lose.	I A A A A A A	
Do			3-10	31	1687					
Out to			2.79	14	1884			1		
			2.66	9	1885					
			3-25	13	1885	******				
Florence	12.81		33	*3	2003	*****	*****		*****	
Gadsden						*****	*****		******	
Do			2.95	9	1887	*****	*****		******	
Greensborough	*******	*****	2-54	9	1885	*****	*****			
Mobile			2-72	21	1876	*****	*****		*****	
Do			2.60	8	1878	* ***		****	******	
Do			4-18	-	1885	1.00	0 35	5	1879	
Montgomery	******	******	A	13	1879	*****	*****	****	******	
Do		*****	3.03	14	1881				******	
		*****	2.93	14	1881		*****	2000	*****	
Mount Vernon Barracks	11.80	.0	3-45	31	1001	*****				
		1843	*****	*******		*****	*****		*****	
Do		1853	3.60	18	1883					
Mount Willing		1887	*****		*****	*****			*****	
Prattville		*****	3.50	14	1884		*****	0.0.0		
Do		*****	3-10	13	1885	*****		****	*****	
Talladega	10-48	1887	*****	*******	*** ***	*****	*****	****	*****	
Trinity	14.60	1887	5-20	4	1887					
Tuscaloosa			3-40	14	1884					

Table showing for	the mo	mth o	of De	cember,	de.	-Cont	inued			Table showing for	the mo	mth q	f De	cember,	dec.	-Cont	inued		
States and stations.	Rainfal inche more mon	s, or	inche	infall of es, or mo 24 hours	re, in	exc		gon	ng or e inch	States and stations.	Rainfal inche more mon	s, or	inche	infall of is, or mo	ore, in	exe	fall ecceding hour.	g on	
MASEL	Amt.	Year.	Amt.	Day.	Year.	Amt.	Time.	Day.	Year.	NA TE	Amt.	Year.	Amt.	Day.	Year.	Amt.	Time.	Day.	Year.
Alabama-Continued.	Inches.		Inches			Inches	h. m.			California-Continued.	Inches.		Inches				A. m.		
Tuscaloosa	11.64		2.74	7 21	1884	******				Fort Reading	11-18	1852 1860	*****				*****	****	*****
Tuscumbia Union Springs			2.70	8	1887					Georgetown	33-77								*****
Valley Head			3.00	31	1887	*****				Grass Valley	12.33								
Wetumpka	*******	*****	2.50	14	1004					Grayson	15-11	1871				*****	*****		
Fort Bowie		1884			-999					Healdsburgh	20.42 12.01								
Winslow		*****	2-02	7	1888	*****	*****	****	*****	Jackson	14-64	*****			*****	*****		****	
Helena	11.09	1866	2.70	23-24	1879					Laytonville		1871		*******					
Do		1884	3-97	30	1884		*****			Los Angeles	11.69	*****	3-58	30-31	1878	1.00	I 00	17	1877
Hot Springs	11.16	1887	*****	*******		*****			*****	Do	*******		4-34	19-20	1879	1.00	1 00	25	1884
Lead HillLittle Rock	16.92	1884	3-94	IO-II	1884		I 08			Do			3-04	21-23	1888				*****
Do			3.36	27	1884					Mare Island	14-02	1871	*****	******	*****		*****	****	****
Mount Ida	15.05	1884	2-80	25 23-24	1884		******			Marysville	12.37	1872					******	****	*****
De	.3.33		10-35	26-30	1884					Meadow Valley	16-40	1864		*******		*****			
Union County	11-12	1850	*****	******	*****	*****	*****		*****	Mendocino	30.35	1866	*****			*****	*****	****	*****
California.	10.57	1866								Do	17.08	1880		*******		*****	*****	****	
Do	10.82	1871								Middletown	22.93	1871		*******					
Alta	11.80	1880								Mount Hamilton	33-84	1884		*******					
Do	10-02	1879		******						Mount Saint Helena	*******	*****	6.65		1880				
Do	13.30	1881								Do	28-91	1880	5-73		1880				
Do	14-08	1884		*******						Mumford Hill		1880		******					
Angel Island	12.06	1872	3.02	21	1885		*****	****	*****	Napa Nevada City	10.16	1884		*******					
Año Nuevo Island	13-10			*******		*****	*****	****	*****	Nicolaus	10.62	*****				*****	*****	****	
Aptos	11-34	1884								North Bloomfield	27.21	1871		*******					
Auburn	13.55	1873								Oakland	12.57	1880		******			*****		
Do	13.91	1880		******						Orleans	12.60	1880						0001	
Benjeja Barracks	16.37	1884	3-34	25						Petaluma	13.87	1871			*****	*****	*****	****	
Bowman's Dam	46.57			******		*****				Pilareitos	10.81	1873		*******		*****	*****	****	****
Do	14-70	1869		*******						Placerville	22.65	10/1						****	
Calistoga	10.19	1873		******						Pleasonton	10-61	1880		*******	*****		*****		
Do	15-83	1880		*******						Point Montara	10.09	1880							
Camp independence	12.19	1867								Point San Jose	10-82	1871				*****			
Camp Lincoln	14.06	1866		*******						Presidio of San Francisco		1852		21			******		
Do	15.95	1868		*******						Red Bluff(1)	12.24	1880	2.94	23	1877	*****		****	
Camp Wright	12.20	1864 1866		*******						Do. (1)		*****	5.04	19					
Do	24-67	1867		*******						Do. (2)	12.85	1880		*******		*****	*****	****	
Do	16.64	1871		*******						Redding		1879		*******					
Cherokee	15.50	1873		*******						Do	14-57	1884							
Cherokee Reservoir	18-25	1873		*******						Reed's Camp	32.07	1880							
Cisco	28-39	1871								Ross Valley	22.85						*****	****	
Do	14-40	1873								Sacramento	12-50	1849							
Do	16-33	1880		*******					5	Do	12.85	1867				*****			
Colegrove	******			22		*****				Do	10-37	1871	2.58	2			*****		
Do	18-84	1872		1	******	*****				Do	11.81	1880	2.30		*****				
Do	16.47	1880				*****			*****	Do	10.45	1884	2.81	21					
Crescent City	23.60	1884		*******		******				Salinas	51.05	1871	3.20	24		*****			
Do	11.75	1866	*****						*****	San Buena Ventura		*****	3.22	(?)	1878		*****		
Do Crystal Springs	26. 26 18. 56	1885		*******						San Diego	******	*****	2.52	27-28	1879			****	
Davisville	11-55	1871							*****	San Francisco (1)	12.00	1852							
Delta	10-47	1880								Do (2)	12.03	1866						****	
Do	12-94	1885							*****	Do (2)	13.32	1866			*****			****	
Dunnigan	10-56	1888 1880		*******						Do (1)	10.69	1867		*******	*****		*****		*****
Emigrant Gap	15.65	1872			*****		*****		*****	Do (1)	14-36	1871				*****		****	
Do	17-30	1873								Do (1)	16.74	1871	3-12	19			*****		
Do	15.38	1880		******						Do	12-33	1880	2.78	21	1885		*****	****	
Pairfield	31.20	1884		*******						San Gorgonio San Luis Obispo	13.93	1880	2.61	3			*****		
Do	10.29	1873								San Mateo	11.37	1880							
Do	10.80	1880								San Rafael	25.10	1884	7.69	17-21 23-26	1884	222000			
Folsom	11.75	1866								Santa Barbara	12.67	1867	3-99	31	1878	*****	*****	****	*****
Fort Gaston	13.86	1863		*******					*****	Santa Crus	12.59	1880		*******					
Do	28-65	1864								Saucelito	12-34	*****			*****	*****			*****
Do	20-55	1866	*****			*****			*****	Scott Valley	12-75	1880		*******	*****			****	
Do	22.19	1867								Shingle Springs	23.76	1867	*****	*******		******	*****	****	*****
Do	14-77	1880	*****	*******		*****	*****	****		South Vallejo	10.71	1880		******	*****		*****	****	
Do	14.49	1884	6.60	24-25						Stockton	16.95	1871							
Fort Humboldt	15.81	1860		*******						Do	10.80	1880	*****	*******		*****			
Do	11.81	1864							*****	Summit	28.88	1871	*****		*****	*****	*****	****	*****
Fort Mason	10-41	1851	4-60	20						Do	13.30	1879	*****			*****			
Do	20.60	1852	*****		*****					Do	10.43	1884	*****		*****	*****	*****	****	*****
Fort Point (1)	11.71	1866	*****	******	*****	*****	*****	****	******	Tennant								****	*****

	Marine	II of	1								Rainfal	110000	1						
States and stations.	Rainfal inche more mor	e, or	inche	infall of 8, or mo 24 hours	ore, in	exc	fall ed seeding hour.	g one	ng or e inch	States and stations.	inche more mor	s, or	inche	nfall of 6, or mo 14 hours	ore, in	exc	fall ecceding hour	gon	ing ie ir
	Amt.	Year.	Ame.	Day.	Year.	Amt.	Time.	Day.	Year.		Amt.	Year.	Amt.	Day.	Year.	Amt.	Time.	Day.	- Avenue
California-Continued.	Inches.		Inches			Inches	A. m.			Indiana-Continued.	Inches.		Inches		1	Inches	h. m.		
ruckee	16-90	1871	*****	*******	*****			****		Richmond	11-20	1852	*****	******					
Do	16.23	1884	******	*******	*****		*****		******	Rising Sun		*****	3-12	3-4	1883	*****	*****	****	***
Do	13-24			*******						Spiceland			2-71	27	1884				
kiah	21.85	1880	******	*******	*****		******	****	******	Do				24	1880	*****	******	****	***
atsonville	11.35	1871	*****		*****	*****	*****	.cex		Wabash	12-72	1876		******		*****			
eaverville	14-14			*******						Fort 8ill			2.70	18-19	1870				
oodaldaeka	14-23	*****								Fort Towson	8.30	1841		******		*****			
Colorado.			3-34	3	10/9	*****				Keokuk			2.61	II	1873				
ke's Peak	4-55	1878	******	*******	*****	*****	*****	****	*****	Nashua	9-95	1880	3-47	26	1883	*****			
rtford		*****	4-30	17-18	1888				*****	Oskaloosa			2.30	16	1003	*****	*****	****	***
w Hartford			3-45	17	x888					Council Grove	*******					1.00	I 00	15	1
w Haven	7-93	1876		17		*****				Fort Leavenworth	******		3-23	22 25	1862	*****	*****	****	***
Dukota.	4.95	1807								Do	*******	*****	2.75	15-16	1870				
Pelmonré.	4-75	1877								Do			3-60	23	1874	*****			
rt Delaware			3-05	17	1863					Holton			2.50	19-13	1878				
Do	*******		3.30	4-5	1868 1868	*****				Leavenworth	0.51	10/3	4-50	12-13	1878	*****	*****	****	
District of Columbia.			3-70	16	1888	*****				Kontucky.									
ndall Green			3-05	16-17	1888					Louisville	******	*****	3.87	3		******			
colving Reservoir			3.65	18	1886			0000		Do			2.70	23-24	1878				
Ploride.	0+33	1859	2.70	17	1888		*****	****	*****	Paducah	20-12	1879?	2.54	30					
amonte Springs			3-48	17	1888					Springdale Louisiana.	10.90	1848				*****			
Do				19	1880	*****				Abbeville			2.70	8	+000				
t Barrancas	13-42	1855		3-4	1877	*****				Alexandria	10.70	1884			1000				
Do	15-46	1879	5-43	5 20	1879	3-43	5 30	5	1879	Algiers	11.30	1870	3-25	*******		*****	*****	****	
Do				3-4	1887	3.33				Baton Kouge	10-10	1855	3.23		1000	*****	******	****	
t Jefferson	12.60	1863		*******	1888				*****	Do	11.73	1858			*****	*****			
t Meade				17	1888	6.20	0 00	17	1888	Black River	*******	1857	2-94	4		*****			
ksonville		*****	4-43	9-10	1885	*****			*****	Uneneyville	11.93	1884	*****	*******	*****	*****			
y West			3-93	20-21	1870	*****	*****	****	*****	Delta Grand Couteau	14-94	1884	3-25	10		******			
simmee City			2-55	. 1	1888					Lake Charles			2.80	15	1888			****	
simmee City	11-17	1888	5-33	16-17	1888	*****				Lake Providence	10.24	1884	*****	*******		*****			
co	******	*****	2.97	10	1886	5-39	4 00	17	1888	Monroe	18-53	1884	12.15	29-30	1884	******			1
rport	10.00	1984	3-39	17	1888 1884					New Orleans			3.82	18					
sacola	10.76	1881	4-17	21	1881	*****	*****		*****	Do	*******		2.59	31	1877	*****			
Dot Francis Barracks	******	*****	1.90	13	1885	*****				Point Pleasant	******	*****	3.40	12-13		*****			
Mark's	10.99	1884		******		*****				Do	*******	******	7.02	8-9	1878				
annasee				16	1887	******				Do	******	*****	4-81 2-81	19-21		*****			
Georgia.										Do	17.69	1878	3-01	29-30	1878	*****			
ens	TT. 25	1850	2.95	14-15		******				Do	13-75	1882	3.01	19	1882		*****	****	**
Do	******	*****	3-74	14		******			*****	Do		*****	5.01	14	1884				**
Po	12.60	1981	2-60	9-10	1888	*****	*****		*****	Do			8.03	28-30	1884		*****		
t Quitman			2.71	13	1882					Port Eads	20.39		3-79	91	1881				
Fayette	10.88	1872		******	*****				*****	Do	11-28	1881	3.83	25	1881				
ledgeville	******	*****	2.60	10	1888	******			*****	Saint Joseph	13.02	1004	2-53	15	1872				
thorpe Barracks	10.11	1881							*****	Do	*******	*****	4-66	21	1875	*****	*****		
man	******	*****	4-70	4-5	1877				*****	Do	15-55	1884	2.83	27	1884	2.00	I 00	II	
Do	******	*****	3.70	16	1884	*****	*****		****	Do	******	******	4.08	28	1884				
Do	******	*****	2-50	23	1887					Vidalia			3.10	8-9	1888	******			
nn Gap	88-45	788	3.65	16-17	1888	******			*****	Mains.									
Mary's			3-75	26-29	1876				****	Brunswick		******	3-84	9-10	1878	******			
nnah	13-26	1870	3 25	16	1870		*****		*****	Portland		*****	3.76	25-26	1877	*****			
Do			3.66	9-10	1885	******				Maryland.				9-10		******		1	
Do			3-71	23-24	1887	******	*****		*****	Baltimore		*****	2.85	10	1878	*****	*****		
se island		*****	3-41	31	1878	******			*****	Fallston			2.52	16-17	1883	******			
Zinano.										Do	******		2-80	6	1884				
ieton	0.31	1000			*****				****	Fort McHenry	8-80	1839	3. 16	17-18		******			
B	******		3-24	31	1871	1.26	1 00	31	1871	Do	*******	*****	3-16	17	1888	*****			**
Do			2.63	27-28	1887			0000	*****	Galena			3-02	10-11	1888	******	*****	***	
npaigo			3.21	2.3	1881		000000			Mount Saint Mary's College			2.59		1888				
ago.	G-50	1973	5-70 i	3	1873		000000			Massachusetts. Blue Hill Observatory			2.89	17	1888				
eansborough			3-22	97	1984					Boston	******		2-58	10	1878				
ngfiold		Sexes	2.62	9	1856	******				Do	******	*****	2.52	17-18	1888		*****	***	
/Numerous		- 1	- 1			1				Dudley	******		3-46	17	1888				
rdon	*****	*****	3.00		1883			00000	20000	Fort Warren	13-917	1872	3-97	18	1888		*****		
		00000	2.44	23	1883	******		***		Nantucket	11.29	1040				T-00	I 00		I
tingburgh	*****	seces,	3.44	-31															
anapolis	*****		3-46	3 .	1873	1.30	00 1	3	1873	Newburyport	******		3-25	17-18	1888				***

Table showing for			1					-		Table showing for			T		7	1			
States and stations.	Rainfal inches more, mon	s, or per	inche	nfall of s, or mo 24 hours	re, in	exc	fall eque	g on	ing or ie inch	States and stations.	Rainfa inche more more		inch	nfall of es, or me 24 hours	ore, in	өжс	fall e ceedin hour	ig on	e inc
	Amt.	Year.	Amt.	Day.	Year.	Amt.	Time.	Day.	Year.		Amt.	Year.	Amt.	Day.	Year.	Amt.	Time.	Day.	Year.
Massachusetts—Continued. Westborough	Inches.		Inches 3.89	17-18	1888	Inches	h. m.			North Carolina—Continued.			Inches 4-25	10	1878				
Detroit				******			0 55		1873	Do			2.65	30	1886	*****			
lackinaw City				20-21	1883		*****		*****	Do				10-11	1887	*****			
Minnesota.	10.32	1879	3.05	21	1882					Highlands	15-04	1881	5.30	22 26	1881				
finneapolis	5.30	1873	*****				*****		*****	Kitty Hawk	******		4-40	26	1877	*****	*****		
Mississippi.	11.00	1884							*****	Do			2.57	30	1888		*****		
iloxirookhaven		1887	4-20	24		4-20			1875	Murphy			2.86	29	1877				
hurchillolumbus	11.52	1850		*******						Weldon	******		3.30	13-14	1879				
Do	10-72	1859					*****			Wilmington			2.98	29	1877				
ayette	******	1870	2.60	13-14	1879					Cincinnati			2.50	31	1871		*****		
Do		1872	2.60	19		*****				Do			3.10	12-13	1873 1880	*****			
Do	14-03	1843	3.20							College Hill			2.60	23-24	1883	*****			
Do	10.06	1869	3-90	21	1869					Clyde	******		3.00	13	1885	*****	*****		
alo Altoarkville	11.17	1887		*******		*****				Do			3.25	3-4	1873				
leksburg Do	12-12	1866	5.05	18-19 23-24	1872					Marietta Portsmouth	10-84	1847		1					
Do	10-33	1872	2.92 3.78	I	1880					Oregon.		1880			1882				
Do			4-51	19-20	1883	*****		****		Albany	11.64	1882	3.27	13	1883	*****			
Missouri.	13-52	1884	4-07	29	1884	*****	*****	****		Do		1886	*****						
efferson Barracks		1846 1884	*****			*****				Astoria	10.16	1854	3-57	31	1875	*****			
erce City	*******		3.00	25-26	1888	*****	*****			Do	10.74	1855 1856		*******	*****		*****		
int Louis (1)		1846 1846								Do		1857							
Do			3.19	31	1846		*****			Do	16-19	1861		*******	*****	*****	*****		
Do		*****		2-3	1873	*****	*****			Do		1862 1863		*******					
int Louis Arsenal	13-55	1846	*****			*****	*****	****	*****	Do	14-27	1864							
issoula	7-24	1871	*****					****		Do	15.50	1866		*** ****	*****		*****		***
Nebraska.	7-26	1882								Do		1867 1868							
Nevada.	9-04	1872								Do		1870							
New Hampshire.										Do	11.32	1872							
ntrimunbarton	10.63	1878	2.60	17-18		******	*****			Do	16.86	1875	*****	*******					
ount Washington	15-95	1881	3.03	14	1881		*****		*****	Bandon	16.64	1887	3.00	9		******			
tco		*****	2.52	11	1878		*****			Do	11.97	1886 1887	3.49	21 28	1885				
illette			3-27	17	1888					Block House	22.59	1858		*******	*****			****	
anoverighland			3-22	17-18	1888 1888					East Portland		1886		*******					
opewellambertville			2.50	17-18	1888	*****				Eola	11.50	1880	*****	*******			*****	****	
oektown			3-05	17-18	1888	*****	*****			Fort Dallas	18.97	1856 1856				*****			
adisonew Brunswick (1)			3-45	17-18	1888 1888					Do									
ew Brunswick (2)			2.88	17-18	1888	*****				Do Do	12.09	1861	*****						
ewton			2.64	31	1887					Fort Stevens	10.70	1865		*******	*****				
ainfieldio Grande	10.75	1872		16-17	1888				*****	Do									
outh Orange			3-75	17	1888	*****				Do	13.90	1871	*****	******					
enafly			3-35	16-17	1888					Do	21.27	1880		*******					
New Mexico.	******		2.52	17	1888		*****		*****	Fort Umpqua		1881	******			*****		****	
rt Tulerosa	7-08	1873	*****						*****	Do	12.60	1857			*****				
denia			4-51	IO	1878					Do	18.95	1861			*****				***
Doyd's Corners			5-02	16-17	1888			****	*****	Fort Yamhill		1856				*****		****	***
ffalo oper Union (New York City)			2.53	22-23	1878				*****	Do	11.37	1858			******		*****		
rt Hamilton			2.52	21	1878		*****		*****	Do	10.01	1863					*****		
w York Cityrth Volney				17						Gardiner	10.80	1865					*****		
wego	10-49	1878	2.81	10-11	1878					Mount Angel	12-45	1886		*******	*****	*****	*****	****	
dy Hook	16.65	1836	2.72	10	1878					Newport Portland	17.91			30-31					
Do			3.60	18	1888					Do		1880	3-15	9-10 12-13	1877				
North Carolina.			3-35	16-17						Do	11.52	1886					*****	****	
ward	10.28	1884	2.85	6						Port Orford	11.34								
pe Lookout	11.25	1878	3-24	29	1877					Do Do	20.00	1853					*****		
arlotte			2.52	13-14	1879					Roseburgh			2.86	4	1879				
Do			3.50	25	1880					Do	*******		2.50	24-25 16-17	1884				
yetteville	14-50	1878	6-00	9-10	1878					Yaquina Light-House	17.91	1887	8-47	5-6	1887				
Do			3.00	6	1879					Pennsylvania.				25		*****			
anklintteras	13-38	1877	4-70	25-39	1875		*****	***	*****	Altoona	9-72	1859	2.90						
Do	10.20	1878	3.72	26	1877 .		*****	***		Chambersburgh	******		2.50	17	1887		*****		

Table showing for	the mo	mth o	f Dec	cember,	dec	-Cont	inued			Table showing for	the me	onth o	f De	cember,	de	Cont	inued			
States and stations.	Rainfal inche more mon	s, or	inche	infall of us, or mo as hours	ere, in	CE:		g one	ng or e inch	States and stations.	Rainfal inche more mor	s, or	inche	infall of s, or mo	ore, in	ex		g on	ding or	
	Amt.	Year.	Amt.	Day.	Year.	Amt.	Time.	Day.	Year.	1 1 1 1 1 1	Amt.	Year.	Amt.	Day.	Year.	Amt.	Time.	Day.	Year.	
Pennylvania-Continued.	Inches.		Inches			Inches	A. 111.			Utah.	Inches.		Inches			Inches	A. m.	-		
Newtown			**********	27	1839	1	*****			Kanab			-		******	*****	1			
'ittaburgh	*******		*****	*******	*****	1.30	1 00	26	1875	Vermont.										
nakertown				16-17	1505					Castleton	6-92	1869	2.60	17	1988	*****			*****	
West Chester				17	1808					Virginia.		1	2.00		1000				20000	
Veettown			3-12	17	1988					Cape Henry	*******	-00-	3-07	10	1878					
Weilshorough	0200000	******	3-46	13	1884		0 20			Lynchburgh	11.81	1884	3-17	13-14	1879		*****			
Do	******		8.30	13	1003	*****			*****	Do	*******		6.74	21	- 00	*****				
ravidence				******			*****	****		Norfolk	*******		2.85	25-26	1872	*****	*****	****		
South Carolina.			2.64	200	7588			1		Rappahannock				10-11		*****				
harleston			2.54	17 25	1873	******				Walnut Grove	*******		3-00	20		*****				
Do			3-46	9-10	1885	*****			*****	Washington.		1			-00-				1	
Do				23-24	1887	*****				Blakely	17.25	1879	2.50	6		*****				
lacienda Saluda lardeeville				27-29	1875	******				Do		1886								
tatesburgh				5-6	1884	*****				Cape Disappointment	10-00	1864		******						
Tennasses.					-00-					Do	16.12	1866		*******	*****	*****		****	****	
shwood			2.70	31	1887	******				Do	14.60	1868		*******						
larksville			2-50	1	1878	******				Cathlamet	13.00	1871								
harleston	*******		3.38	21	1884				*****	Do	20.00	1875		*******						
hattanooga			3.08	21-22	1879	*****				Port Canby	13-54	1880	3.69	13	1882	*****			****	
Do			3.10	3	1874	******				Do	11.55	1881	4-11	*******			*****	****	*****	
ookville	*******		2.97	31	1887	*****				Do	12.46	1882	2-58							
lat Creek	******	*****	2.62	21	1884	*****				Do	10.56	1885	*****	*******	*****	*****	*****	****	*****	
lorence Station	*******		2.95	31	1887	******				Do	17-35 15-18	1887		*******	*****	******		****	*****	
Do	*******		3.00	31	2887	*****		****	*****	Fort Stellacoom	13.01	1857			*****		*****			
reensville			3.00	5	1886	*****				Fort Vancouver	12.06	1867	*****	******	*****	*****	*****	****	*****	
rief	*******	500000	3.70	31	1884	******				Do	13-37	1855	******	*******	******		*****	0000	*****	
onesborough		*****	3.00	5	1886					Do	15-37	1856		*******						
nozville	*******	*****	3.48	19-20	1872	1.10			1873	Do	12-28	1857		******						
awrenceburgh	*******	*****	3-88	31	1887	1.03	0 30		1875	Fort Walla Walla	12.84	1861		*******						
lemphis			3.00	29-30	1884	******				Neah Bay	27-30	1863	3-10	12	1886					
arksville			2.72	21	1884	*****				Do	14.50	1864	2-83	4	1887					
liddleton			3.00	31	1887	******				Do	14.00	1880	5-45	10-17	1887					
avannah	********	******	27.58	31	-00	******				Do	11.83	1883		*******						
Tuzna.					-0					Do	13.00	1885		*******						
ustin razoris	*******	*****	3-45	8-9	1872	1.05			1879	Do	30.70	1887		*******						
larkaborough	18.50		3.45	*******		*****				Olympia	11.73	1877	*****	******						
larksville	13-50		8.50	29-30		1.36				Do	11-42	1879	3.60	. I	1878		*****		*****	
Do	10-25	1874	3.00	31-10		*****				Do	16.66	1880 1882	3-31	30-31		*****				
100			8.50	28-29		*****				Do	13-38	1886	2-50	30-31	1886					
Do. *****		*****	2.75	3	1877					Do	15-75	1887	3-82	6-7		*****				
Do		*****	2.50	13	1881	2.50				Pysht	21.61	1886	******	*******						
ort Clark	23.03	1857				******				Do	16.00	1887		*******						
ort Graham	11.03	1850		******	*****	*****	*****		*****	Tacoma		-006	2.82		1886					
ort Worth	*******	*****	2.50	25		2.50				Do	11.09	1886		*******						
alveston		*****	4.63	21-22		1.36				Tatoosh Island	10-45	1883	2.85	20-21	1884				*****	
Do		*****	4-74	19-20	1878					Do	12-47		2.95	2-3	1880			****		
De	******		2.72	18-19		******				Do	25-84	1885	4.02		1886					
Do				23-24		******				Do	17-47	-00-								
lmer		*****	3.17	20-21	1875		*****		*****	Do	11.82	1888								
Do.			5.00	27-28						Tatoosh Light-House	11.75	1870	*****			*****	*****	****		
oxia	12.00	10/7	2.50	29						Do	15-75	1871			*****					
ow Ulmanananananananana	16.43	1875	5.62	3	1875					Vashon	10.67	1887							****	
Do	*******		3-12	31	1875					West Furginia.	9.9.						1.00	- 1		
Do			8-75	31						Helvetia	8.81	1001		*******	*****	*****		****		
Do			2.63	30	1877					Apploton	9-29	1857								
Do			2-85	12	1885					Wyoming.		-			-					
alestine			3-57	10-11	1884		*****		*****	Fort Fetterman	6.02	1872	*****	******	*****		*****	****	*****	
W WINNIE VILY		000000	4.33	13	1007		1 00	2000	00000				1, 1875	-		-	-			

WINDS.

The most frequent directions of the wind during December, coast north of the forty-fifth parallel southerly winds prevailed; 1888, are shown on chart ii by arrows flying with the wind. In the Saint Lawrence Valley, New England, and New York In the Saint Lawrence Valley, New England, and New York south to west winds prevailed. On the Atlantic coast south of the fortieth parallel, and along the Gulf coast east of the Mississippi, north to west winds predominated. In the Lake region, and the Ohio and lower Mississippi valleys they were generally from aouth to west; in the upper Mississippi and Missouri valleys from the northwest, while in the Rocky Mountain regions and Texas they were variable. On the Pacific Fort Canby, Wash., 56, s. 2d; 60, s., 8th; 54, s., 11th; 69., s.,

Diego northwest.

12th; 60, s, 13th; 56, se., 15th; 60, se., 25th; Tatoosh Island, Wash., 54, e., 13th; 55, e., 26th.

LOCAL STORMS.

With the exception of a severe wind storm, which presented the characteristics of a tornado, reported by Mr. J. T. Richardson, of Clarksville, Tenn., as occurring south of that place, near Orgain's Cross Roads, on the evening of the 16th, no well-defined local storms have been reported for December, 1888, and the following reports by Signal Service observers generally more important areas of low pressure traced on chart i:

17th. Virginia .- Spottsville, Surry Co.: a severe wind and rain storm occurred in the evening, causing considerable damage to property .- Report of voluntary observer

17-18th. Pennsylvania .- Harrisburg: the severe wind and rain storm was very destructive to property in the Cumberland Valley; several houses were unroofed; barns blown down, and fences demolished. The damage is estimated at several thousand dollars.

caused several minor washouts on the railroads eastward, slightly delaying trains.

24th. California.—Red Bluff: heavy rain began 10.15 a. telegraphic communication.

m. and continued, with short intermissions, until 7.42 p. m.; many of the streets and sidewalks were flooded and impassable during the storm. Florida.-Micco: rain began during night and ended 4.45 a.m.; in that time 6.33 inches were measured, most of which fell between 12.30 a.m. and 4 a.m.; many washouts have been reported, and several small boats were sunk by the storm.

25th. Kansas.—Leavenworth: a sleet storm began 6.20 p. m.; turned to heavy snow about midnight, and ended during the night. The sleet and snow caused much damage to refer to disturbances incidental to the passage of some of the telegraph and telephone wires, and also delayed trains on all roads leading to this point.

25-26th. Missouri.—Kansas City: a severe sleet storm prevailed during the night and ended 10.45 a. m. 26th. The electric light, telephone, and telegraph wires in the city became thickly coated with ice, and gradually succumbed to its weight, extinguishing the electric lights, and seriously crippling the telegraph and telephone service. The damage done by the

storm in this city is estimated at several thousand dollars. 26th. Iowa .- Dubuque: sleet and snow fell throughout 21st-23d. California.—Los Angeles: the heavy rains the night, and rain and snow fell alternately during the day until 5.50 p. m. Railroad trains were delayed, and the telegraph lines were covered with sleet, interfering seriously with

INLAND NAVIGATION.

STAGE OF WATER IN RIVERS AND HARBORS.

In the following table are shown the danger-points at the various stations; the highest and lowest depths for December, 1888, with the dates of occurrence and the monthly ranges:

Heights of rivers above low-water mark, December, 1888 (in feet and tenths)-

Stations.	a nger- point on gauge.					- 30
	A	Date.	Height.	Date.	Height.	Monthly range.
Red River:						
Shreveport, La Arkansas River:	29.9	31	12.8	14	3.7	9.
Fort Smith, Ark	22-0	28-29	17-0	7, 8, 12	2.0	15.
Little Rock, Ark Missouri River:	23.0	31	17-4	6,7,8,9	3-3	14-
Leavenw'rth, Kans.	20-0	I	5-2	25	4-0	I-
Kansas City, Mo Mississippi River:	21.0	1, 2, 4, 5, 6, 7	5.8	25-27	4-7	1.
Saint Paul, Minn	14-5	I	2.6	10-11	2.0	0.0
La Crosse, Wis *	24-0	2-3	3-0	12	2.6	0-1
Dubuque, Iowa	10.0	. 1	3.0	19-20	1.6	I
Davenport, Iowa		27	2.5	24	0.5	2.1
Keokuk, Iowa		28	2.0	22	- 0.5	2.
Saint Louis, Mo	32.0	31	8-5	25	3.7	
Cairo, Ill		1	20-0	16-18	9-5	10.
Memphis, Tenn	34.0	1	17-9	16, 18, 19, 20, 21	8.0	9-
Vicksburg, Miss	41.0	1	27-2	20, 31	9.7	17-
New Orleans, La Ohio River:	13.0	4	9-7	29	5.8	3-1
Pittsburgh, Pa	22-0	19	12-2	16	3-2	9-1
Parkersburg, W.Va.	38.0	21	14-7	9	6.2	8-
Cincinnati, Ohio	50.0	24	23-8	12	12.5	3.
Cumberland River:	25-0	25	9-6	7,8	5.8	
Nashville, Tenn Tennessee River:	40.0	24	8-4	16, 17	3-2	5-1
Knoxville, Tenn	39.0	20	5.6	16	1-3	4-3
Chattanooga, Tenn . Monongahela River :	33.0	23	6-9	• 9	4-0	2.5
Pittsburgh, Pa Savannah River:	29-0	. 29	12-2	16	3-2	9-0
Augusta, Ga Willamette River:	32.0	18	19-3	9	8.9	10-4
Portland, Oregon	15-0	19	5-7	1,2	1.8	3.9

*12 days record; river frozen remainder of the month.

ICE IN RIVERS AND HARBORS.

the closing of navigation by ice on the Great Lakes and the more northerly rivers:

Lake Ontario. - Oswego, N. Y.: the schooner "Pictor," which left port on the 10th, was the last departure, and navigation is considered closed for the season. The canals were closed to navigation on the 3d.

Lake Erie.—Buffalo, N. Y.: navigation closed on the 15th, the steamer "Romania" being the last arrival of the season. Sandusky, Ohio: navigation practically closed on the 8th. Cleveland, Ohio, 8th: navigation has practically closed for the season. Toledo, Ohio: navigation at this port closed on the 3d, the steam barge "Bessie" being the last departure.

Lake Saint Clair .- Detroit, Mich .: the United States Lightship at Grassie Pointe Flats, Lake Saint Clair, was removed on the 7th, virtually closing navigation at this point.

Lake Michigan .- Manistee, Mich .: navigation was practically closed on the 1st, and entirely closed on the 15th. Green Bay, Wis.: the steamer "Welcome" arrived early on the morning of the 12th from down the bay. She was the last arrival of the season, and navigation is considered closed.

Lake Huron .- Alpena, Mich.: Thunder Bay was frozen over on the 20th; navigation closed.

Lake Superior .- Duluth, Minn : navigation closed on the

2d, the propeller "Spokane" being the last departure.

Androscoggin River.—Lewiston, Me.: the river froze over on the 15th.—Report of New England Meteorological Society. Baker's River .- Plymouth, N. H.: the river froze over on

the 16th.—Report of New England Meterological Society. Merrimac River .- Newburyport, Mass.: the river froze on the 15th, and opened on the 31st .- Report of New England

Meteorological Society. Hudson River.-Poughkeepsie, N. Y., 14th: navigation on

the river is about closed. Steamers of the Albany and Troy lines passed here on their last trip this evening going south. The ice at Castleton is fast, and all the bays and coves along the Hudson are frozen over .- Baltimore Sun, December 15.

Allegheny River .- Pittsburgh, Pa.: floating ice in river 14th to 18th, 21st to 25th, 27th to 31st.

Monongahela River .- Pittsburgh, Pa.: floating ice in river

20th, 23d to 25th, 27th, 28th.

Saint Clair River.—Port Huron, Mich.: navigation closed The following reports of Signal Service observers refer to on the 11th; the steam barges "Romania" and "Australia" were the last boats to pass this point. Fort Gratiot light was discontinued on the 19th. Floating ice in river on the 22d; it was free from ice on the 25th.

Mississippi River .- Keokuk, Iowa: the Warsaw packet "Patience" went into winter quarters on the 18th, ending navigation for the season; floating ice in river 19th and 28th.

Dubuque, Iowa: floating ice in river 12th, 13th, 18th; the river froze over on the 27th. La Crosse, Wis.: floating ice in river 11th to 14th, 17th to 20th; the river froze over on the 21st; it opened again on the 23d, and navigation, which had been interrupted since the 21st, was resumed; floating ice in river on the 26th; it froze over again on the 27th, when navigation closed for the season. Saint Paul, Minn.: the river was gorged by ice during the night of the 14-15th a short distance below the landing at the foot of Jackson street; the ice dam increased gradually up to the 22d, at which time it had reached the Jackson street landing.

Missouri River .- Omaha, Nebr.: floating ice in river 2d, 3d, 4th, 18th. Bismarck, Dak.: navigation closed on the 2d.

Saint Mary's River .- Sault de Sainte Marie, Mich .: the locks in the canal were closed on the 3d, and navigation suspended at this place and Lake Superior point.

Little Arkansas River .- Wichita, Kans.: the river froze over on the 20th.

FLOODS.

Harrisburg, Pa.: owing to the heavy rains which fell during the storm of the 17-18th the Susquehanna River rose very high, flooding lowlands .- Report of Signal Service observer.

HIGH TIDES.

Key West, Fla., 4th; Southport, N. C., 23d. Provincetown, Mass., 8th: the tide was unusually high during the past week.—Report of Now England Meteorological Society. East-port, Me.: high tides occurred from the 3d to the 7th; the highest tide previously noted occurred in 1869; on the 5th of the present month it rose five inches higher than in 1869, overflowing several of the wharves; the wind was light at the time and little damage was caused .- Report of Signal Service observer. Asbury Park, N. J.: the severe wind storm on the morning of the 11th caused the tide to rise very high, entirely destroying a number of the cottage bulk-heads at Monmouth Beach, which were partially torn out by a storm two weeks ago .- The New York Sun, December 12.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Faint auroral displays were reported as far south as Clayton and Egg Harbor City, N. J. To the westward of the Atlantic coast states no auroras were observed south of the forty-fourth parallel, and none were noted at stations in the Lake region. They were most frequently reported at Saint Vincent, Minn., and were seen on from one to three dates at stations in Dakota and northeastern Montana.

The most notable display of the month occurred at Saint Vincent, Minn. "It was first observed at 11 p. m., 23d, as an irregular, diffused light; at 11.30 p. m. a distinct arch had formed which rose to about altitude 40° and covered about 160°

azimuth."-Report of Signal Service observer

Auroras were observed during the month as follows: 1st, Clayton, N. J. 3d, Spring Lake, Dak.; Saint Vincent, Minn. 4th, Fort Sully and Spring Lake, Dak. 5th, Fort Buford and Fort Sully, Dak. 7th, Saint Vincent, Minn. 8th, Fort Buford, Dak.; Poplar River, Mont. 23d, Fort Totten, Dak.; Saint Vincent, Minn.; Wedgewood, N. Y.; Eagle's Mere, Pa. 24th,
Fort Totten, Dak.; Saint Vincent, Minn. 25th, Davenport,
Dak.; Saint Vincent, Minn. 26th, Egg Harbor City, N. J. and Missouri on five days.

29th, Orono, Me.; Saint Vincent, Minn. 30th, Fort Assina boine, Mont.

THUNDER-STORMS.

Thunder-storms were reported during the month, by states and territories, as follows: 2d, 1; 3d, 1; 8th, 9th, 12th, and 13th, 1; 14th, 2; 15th and 16th, 4; 17th, 1; 22d, 2; 23d, 4; 24th, 2; 25th and 26th, 3; 27th, 2; 29th, 1; 30th and 31st, 2. None were reported on the 1st, 4th to 7th, 10th, 11th, 18th to 21st, and 28th.

Thunder-storms were reported in the several states and territories, by days, as follows: Ariz., 5; Ark., 1; Cal., 1; Fla., 2; Ga., 1; Ind T., 2; Kans., 1; La., 6; Md., 1; Miss., 1; Mo., 5; Nebr., 1; N. J., N. M., N. Y., 1; Tex. 8. In Ala., Colo., Conn., Dak., Del., D. C., Idaho, Ill., Ind., Iowa, Ky., Me., Mass., Mich., Minn., Mont., Nev., N. H., N. C., Ohio, Oregon, Pa., R. I., S. C., Tenn., Utah, Vt., Va., Wash. Ter., W. Va., Wis., and Wyo. no thunder-storms were reported.

Thunder-storms were reported in the greatest number of states and territories (4) on the 15th, 16th, and 23d.

They were reported on the greatest number of days (8) in Texas. In Louisiana they were noted on six, and in Arizona

MISCELLANEOUS PHENOMENA.

PRAIRIE FIRES.

Bismarck, Dak., 9th: large prairie fires are raging seven miles northwest of station; nearly 1,000 acres of pasture have been burned over, and about sixty tons of hay and one ranch building consumed. Prairie fires also occurred to the east of station on the 22d.

Prairie fires also occurred on the following dates: Fort Buford, Dak., 1st; Parkston, Dak., 23d; Fort Sill, Ind. Ter., 1st, 2d, 3d, 10th to 13th.

HALOS.

Solar halos were most frequently noted in California and Illinois, where they occurred on twelve days. In Indiana they were reported on ten days; in Ariz., Fla., Iowa, Md., Mass., N. J., N. Y., Ohio, Oreg., Tenn., Tex., Vt., and Wis. on from five to nine days. None were reported in Ala., Colo., Del., D. C., Idaho, Me., Miss., Mo., Nev., N. Mex., R. I., Utah, W. Va., and Wyo. They were reported in the greatest number W. Va., and Wyo. They were reported in the greatest number of states and territories, twenty, on the 7th; in twelve on the 11th, and in eleven on the 8th. On the 3d, 5th, 10th, 13th to m. (ninetieth meridian time), I noticed a bright circle passing 16th, 25th, 26th, and 31st they were noted in from five to ten through the moon in its southern side, and extending about

states and territories. The 2d was the only day on which solar halos were not observed in some portions of the country.

Lunar halos were most frequently reported in California and Tennessee, where they were observed on twelve dates. In Indiana they were noted on ten dates, while in Ala., Ariz., Dak., Iowa, Kans., Ky., La., Md., Mich., Minn., Mo., Mont., Nebr., Nev., N. J., N. Y., Oregon, Pa., S. C., Tex., and Va. they were reported on from five to nine dates. None were reported in Ark., Del., and R. I. They were reported in the greatest number of states and territories, twenty-seven, on the 11th; in twenty-three on the 12th, and in twenty-one on the 15th. On the 7th, 9th, 10th, 13th, 16th, 18th, 19th, and 26th they were reported in from ten to twenty states and territories. On the 1st, 2d, 28th, and 31st no lunar halos were observed.

REMARKABLE LUNAR HALO.

The following description of a remarkable lunar halo has

80° or 90° northward, making our position exactly in the centre of the circle. At the same time there was an ordinarily bright halo around the moon. This large arch was plainer than the halo and was plainest where it was clearest of clouds. There were a few hazy clouds, and at times they encroached upon the circle and made it fade, but it returned as the haze blew away. Occasionally bright spots came into the perimeter to last a few moments only. It seemed to become a very little smaller after some five or six minutes. In fifteen minutes it was gone, but the halo around the moon remained. The cloudiness remained about the same."

METEORS.

The distribution of meteors, by dates, was as follows: 1st, Matanzas, Fla. 2d, Lansing, Mich.; Beverly, N. J. 3d, Harrisonville, Mo. 4th, Fort Sully, Dak.; Pontiac, Mich. 5th, Pontiac, Mich.; Palo Alto, Miss. 6th, Vevay, Ind. 7th, Nashua, N. H. 9th, Tremont, Mich. 10th, Vevay, Ind.; Yates Centre, Kans.; Protem, Mo. 12th, Keeler, Cal.; Woonsocket, Dak.; Barren Creek Springs, Md.; Cedar Springs, S. C. 13th, Cairo, Ill. 14th, Holyoke, Mass.; Beverly, N. J. 19th, Princeton, Mo. 20th, Little Rock, Ark.; Middlebrook, W. Va. 22d, Tremont, Mich.; Protem, Mo. 23d, New Market, Ala.; Fox Creek, Mo. 24th, Providence, Mass.; Palo Alto, Miss. 27th, Matanzas, Fla. 28th, Orono, Me.; Ypsilanti, Mich.; Beverly, N. J. 29th, Dale Enterprise, Va. 30th, Clinton, Iowa; Barren Creek Springs, Md.; Beverly, N. J. 31st, Glenwood, Iowa; Bendena and Yates Centre, Kans.; Protem, Mo.

The following are more notable meteoric displays reported: Lead Hill, Boone Co., Ark.: a large, bright meteor was observed in the northeastern sky at 4.55 a.m., 2d. It moved toward the northwest, and when near the horizon broke into two parts; the meteor left a trail of light in its wake.

Cape Henry, Va.: several small meteors were observed on the 6th; one large one, noted in the northeast at 7 p. m., moved horizontally in a westerly direction and exploded after a flight of five seconds, its colors being red and violet.

Orono, Me.: a brilliant meteor was observed passing across the northwest sky at 5.05 p.m., 28th; it left a long train of light in its passage.

Willow, Colusa Co., Cal.: a meteor was observed at 10.45 p. m., 29th; it passed slowly from near the zenith south-south-eastward and disappeared below the horizon; duration of passage about six seconds.

MIRAGE.

Mirage were observed as follows: Yuma, Ariz., 1st; San 20th; Dodge City, Kans., 2d, 14th, 15th, 22d, 23d.

80° or 90° northward, making our position exactly in the centre of the circle. At the same time there was an ordinarily bright halo around the moon. This large arch was plainer than the halo and was plainest where it was clearest of clouds.

Diego, Cal., 5th; Kimball, Dak., 1st, 3d, 2sth; Webster, Dak., 30th, 31st; Woonsocket, Dak., 3d, 29th, 30th, 31st; Hampton, Iowa, 8th, 29th; Hay Springs, Nebr., 14th; Brady, Tex., 11th; Cape Henry, Va., 25th.

SUN SPOTS.

Prof. F. P. Leavenworth, director, Haverford College Observatory, Pa. (observed by Mr. H. V. Gummere, assistant):

Date. December, 1888.		Number of new-	Disappeared by	- (2)		Reappeared by solar rotation.		Total number visible.		Faculae,	Remarks.
Fratryi (Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	
ı, 3 p. m	0	0	0	0	0	0	1	13	0	0	Definition poor,
4, 10 a. m	0	0	0	0	0	0	I	9	2	4	Definition good.
5, 13 m	0	10	0	0	0	0	1	19	5	14	Definition very good.
6, 10 a. m	0	0	0	0	0	0	1	5	5	9	Definition good.
7, 12 m	0	0	0	0	0	0	1			13	Definition very poor.
8, 9 a. m	0	2	0	0	0	0	1	3	4 2	27	Definition fair.
12, II a. m	0	0	1	3	0	0	0	0	2	7	Definition poor.
13, 11 a. m	0	0	0	0	0	0	0	0	3	4	Definition good.
14, II 8. m	0	0	0	0	0	0	0	0	0	0	Definition very poor.
15, 11 a. m	I	II	0	0	0	0	1	II	3	II	Definition good.
19, 3 p. m	0	5	0	0	0	0	1	16	3	4	Definition good.
20, 12 m	0	1	0	0	0	0	1	17	****	****	Definition poor; too misty for faculae.
21, 11 a. m	0	0	0	0	0	0	I	8	5	19	Definition good.
22, 10 a. m	0	0	I	8	0	0	0	0	0	0	Definition very poor.
14, II 8. II	1	1	0	0	0	0	1	1	7 6	20	Definition very good.
25, 12 m	0	0	0	0	0	0	0	0		21	Definition very good.
16, 12 m	0	0	0	0	0	0	0	0	2	4	Definition poor.
28, 11 a. m	0	0	0	0	0	0	0	0	8	15	Definition good.
29, 11 a. m	1	1	0	0	0	0	I	1	9	23	Definition good,

Mr. John W. James, Riley, McHenry Co., Ill.: one of the large spots (seen near e. edge November 27th) vanished December 4th, when two days past sun's meridian; the other estimated 29,000 miles diameter disappeared, by the solar rotation, 7th, but failed to reappear, when due, on e. edge, 19th; a group of small spots two days from w. edge disappeared 21st, and none seen the rest of the month.

Mr. H. D. Gowey, North Lewisburgh, Champaign Co., Ohio: sun spots were observed on the 4th and 5th.

SAND STORMS.

Sand storms were reported as follows: Little Rock, Ark., 20th: Dodge City, Kans., 2d, 14th, 15th, 22d, 23d.

VERIFICATIONS.

INDICATIONS FOR 24 HOURS IN ADVANCE.

Percentages of indications verified. December, 1888

*In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. †The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

The percentages of verifications of the 8 p. m. daily indications for December, 1888, as determined from comparison of succeeding telegraphic reports, are given in the table below.

The predictions for districts east of the Rocky Mountains for December, 1888, were made by Assistant Professor H. A. Hazen, and those for the Pacific Coast districts were made at San Francisco, Cal., by 2d Lieutenant J. E. Maxfield, Signal Corps; the verifications for all districts were determined by Assistant Professor C. F. Marvin.

CAUTIONARY SIGNALS FOR DECEMBER, 1888.

Statement showing percentages of justifications of wind signals and cold-wave signals for the month of December, 1888:

Wind signals.—(Ordered by Assistant Prof. H. A. Hazen.) Total number of signals ordered, ninety-two; justified as to velocity, wholly, fifty-nine, partly, thirteen; justified as to direction, eighty-seven. Number of cautionary signals ordered, sixty; justified, wholly, thirty-five, partly, seven. Number of

storm signals ordered, thirty-two; justified, wholly, twenty-four, Percentages of local verifications of weather and temperature signals as reported by directors of the various State Weather Services for December, 1888. Number of signals ordered for easterly winds, twenty-nine; justified, twenty-six. Number of signals ordered for westerly winds, sixty-three; justified, sixty-one. Number of signals ordered late, eight. Number of winds without signals, seventeen. Percentage of justifications, 72.4.

Cold-wave signals .- (Ordered by Assistant Prof. T. Russell.) Total number of signals ordered, two hundred and seventy three; justified, wholly, one hundred and thirty-five, of which fifteen were ordered late, partly justified, ten. Number of severe cold waves without signals, fifteen. Percentage of justifications, 49.5.

States.	Weather.	Tem- perature.	States.	Weather.	Tem- perature.
Illinois	67.9 80.4 91.0 92.0 79.6	83.0 84.1 81.7 83.8 100.0 90.0 79.1 91.1	New Jersey	86.6 85.0 84.5 86.0 87.5 90.8 80.3	87-3 80.0 80.2 82.0 91-5 88-5 78-3

STATE WEATHER SERVICES.

[Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.]

The following extracts are republished from reports for December, 1888, of the directors of the various state weather services:

ALABAMA.

The season has been mild and pleasant, although the average temperature was 4.5 below the normal. This is to be accounted for upon the ground that the reduction of temperature was distributed over the entire period with but the reduction of temperature was distributed over the entire period with but three or four really cold days, and the fair, sunshiny days were largely in the majority. The weather was generally cool enough, however, to produce light frosts and thin ice frequently during the month. The lowest temperature recorded was 13, in the northeastern portion of the state. In middle and southern Alabama the depression was not so low. Every December since the organization of the state service has recorded a minimum temperature below that of December just closed. In 1884, 6 was registered at one or more stations; in 1885, 12; in 1886, zero, and in 1887, 10. The rains were not heavy, and the total average precipitation was 1.98 below the normal. The winter wheat has suffered slightly on account of the deficiency of rain.

Summary.

Temperature.—Monthly mean, 46; highest monthly mean, 51.2, at Troy; lowest monthly mean, 40.3, at Valley Head; maximum, 71, at Bermuda, 25th; minimum, 13, at Valley Head, 20th; range for state, 58; greatest local monthly range, 53, at Troy; least local monthly range, 31, at Selma.

Precipitation.—Average for the state, 2.71; greatest, 4.32, at Tuscaloosa;

ast, 1.86, at Florence.

Wind.—Prevailing direction, northwest.—P. H. Mell, Signal Corps, Auburn, director.

ARKANSAS.

Summary

Temperature.—Monthly mean, 43.8; highest monthly mean, 50.7, at Forrest City; lowest monthly mean, 39.6, at Lead Hill; maximum, 73, at Texarkana, 6th; minimum, 15, at Hebir, 20th; greatest local monthly range, 53, at Conway; least local monthly range, 38, at Camden.

Precipitation.—Average for the state, 3.57; greatest, 7.16, at Ozone; least, 0.23, at Prescott.—Prof. John C. Branner, Little Rock, director; W. U. Simons, Corporal, Signal Corps, assistant.

The past month has been a most remarkable one, and will long be remembered as one of the mildest of which there is any record. Never before has the average temperature of December been so high, the snowfall so light, nor the minimum temperature so high. The precipitation has been below the average, and while frosts have been as numerous as usual, they have been unusually light, and the ground but very slightly frozen at any time. In the northern counties the ground was considerably frozen, but in the central and southern counties it was scarcely frozen at all. Snow fell on several occasions but was always light, and remained on the ground but a short time. sions, but was always light, and remained on the ground but a short time cepting the northern counties not more than a day at one time; and at the end of the month no snow remained on the ground in the state, except in a few of the extreme northern counties, and even there very little of it.

Summary.

Temperature.—The average for the month, 38.5, was 5.7 above the average Temperature.—The average for the month, 33.5, was 5.7 above the average of the past ten years, an excess that raises the yearly average considerably, so that it is only 0.9 below the mean of the past thirteen years.

Precipitation.—The rainfall was only 0.40 below the average of the ten previous Decembers and was very equally distributed over the state, the average being the same for the three divisions.

Wind.—Prevailing direction, southwest.—Col. Charles F. Mills, Springfield, director; James Cassidy, Sergeant, Signal Corps, assistant.

INDIANA.

December, 1888, will be remembered as one of the mildest, and at many stations the mean temperature was the highest on record in Indiana for that month; steady high temperature prevailed and the absence of sudden changes to low temperature, below zero, was a marked feature this year. Warmer

periods occurred on the 7th and 8th, 15th and 16th, and from the 24th to 26th; while colder periods were very uninteresting and of no note whatever. The departure of the mean temperature from the normal was nearly +4.0.

The precipitation for the month was exceedingly small, and the small amount of snow which was precipitated did not cover the ground for any great length of time, as it melted or evaporated soon after it had fallen. The greatest amount of rain, and that less than 1.00 in twenty-four hours, was measured nearly everywhere on the 15th and 16th, on the approach and passage of the lowest barometric area. The average amount of precipitation was about 1.64 below the normal for December. below the normal for December.

Temperature.—Monthly mean, 34.6; highest monthly mean, 39.5, at Marengo; lowest monthly mean, 30.4, at Mauzy; maximum, 62.5, at Cannelton, 25th; minimum, 7.0, at Mauzy, 14th; range for state, 55.5; greatest local monthly range, 48.0, at Mauzy and Butlerville; least local monthly range, 37.0, at Columbus and De Gonia Springs.

Precipitation.—Average for the state, 1.78; greatest, 3.65, at Hunting-burgh; least, 1.19, at Vevay.

Wind.—Prevailing directions, south and southwest.—Prof. H. A. Huston,
La Fayette, director; C. F. R. Wappenhans, Sergeant, Signal Corps, as-

The month was fair, dry, and extraordinarily warm, very moderate westerly winds prevailing. The mean temperature was 7.5 above the normal. During the preceding twenty years December has but three times been as warm, viz., in 1875, 1877, and 1881; the warmest December being that in 1877, which was 17 above the normal. The highest temperature at the central station was 58, on the 23d, a temperature which had not been reached in December since 1877; the lowest, 10, on the 28th. During the preceding fifty years there have been only four Decembers without temperatures falling to or below zero, viz., in 1846, 1858, 1877, and 1881.

The total amount of precipitation in December exceeded 2.00 in a broad belt running west of the Mississippi, and extending in southern Iowa as far as to Clarke and up to Story counties; west of this belt, and half way up the Missouri, the rainfall exceeded 1.00; the northwest and west, down to Adams county, received less than 1.00.—Dr. Gustavus Hinrichs, Iowa City, director.

KANSAS.

The temperature ranged from 3 to 10 above the December average, being nearest normal in the eastern counties, rising towards the west. The highest temperature occurred during the early part of the month and the lowest after Christmas. The precipitation during the month was mostly in the form of snow or sleet. In the eastern division there were three wet spells, the first on the 7th and 8th, the second from the 14th to 17th, and the last from the 24th to 30th, in the middle division it mostly occurred from the 24th to 30th, while in the western division it occurred on the 14th and 15th and from the 25th to 30th. 25th to 30th.

Summary.

Temperature.—Monthly mean, 35.9; highest monthly mean, 40.0, at Wellington; lowest monthly mean, 30.8, at Marydale Farm; maximum, 74, at Gorham, 4th; minimum, —3, at Topeka, 28th; range for state, 77; greatest local monthly range, 66, at Concordia and Topeka; least local monthly range, 43, at Victoria; greatest daily range, 57, at Santa Fé, 4th; least daily range, 2, 25th, at Halstead.

Precipitation.—Average for the state, 0.52; greatest, 3.89, at Independence; least, 0.00, at Grainfield and Grinnell.

Wind.—Prevailing direction, south.—Prof. J. T. Lovewell, Topeka, di-

Wind.—Prevailing direction, south.—Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Sergeant, Signal Corps, assistant.

KENTUCKY.

Summary.

Temperature.—The December mean for the state was 38.7, which is a slight

excess above the normal; maximum, 65, at Franklin, 25th; minimum, 8, at Ashland, 22d; highest monthly mean, 40.8, at Millersburgh; lowest monthly mean, 33.4, at Falmouth; the warmest days of the month were 24th, 25th, and 26th; the coldest, 14th, 18th, 20th, and 22d.

Precipitation.—The average for the state was 1.49, being about 1.50 less than the normal; the greatest, 2.02, at South Fork, and the least, 1.10, at Millersburgh. The average number of days upon which rain or snow fell was 5.9.—Dr. E. A. Grant, Louisville, director; Frank Burke, Sergeant, Signal Corps. assistant. nal Corps, assistant.

LOUISIANA.

The month was comparatively mild and pleasant, sunshiny days prevailing to a marked degree. The average temperature was but 0.5 below the normal past twenty years. The warm periods were about the 5th, 12th, and 25th, and the coolest period occurred from 19th to 21st throughout the state. The maximum temperature reported was several degrees above an average maximum December temperature for Louisiana; the general average being about 78. In 1884 and 1886 the temperatures were, respectively, 85 and 84, the former being the highest December maximum on record for the state. The

former being the highest December maximum on record for the state. The minimum temperature was slightly below the average for December, the general average being about 20. The coast minimum temperatures ranged from 31 to 40, occurring during the cool spell of 19th to 21st.

There was a general deficiency of 0.70 in the rainfall for the northern and southern sections. As a rule the rainfall is nearly half an inch greater in the northern section of the state during December, and the averages for the past month show the normal difference to have existed within a few hundredths of an inch of an inch.

The prevailing dates of rainfall were the 3d, 9th, 15th, 16th, 25th, and 26th, with light local rains from 29th to 31st. The remainder of the month was dry and pleasant. A thunder-storm was general in the western and northern parishes on the 15th, and was accompanied with heavy rain, averaging 1.13.

Summary. Temperature.—Monthly mean, 51.0; highest monthly mean, 57.8, at New Iberia; lowest monthly mean, 47.6, at Delta; maximum, 80, at Farmerville, 12th; minimum, 19, at Liberty Hill, 20th, and Clinton, 19th and 20th; range for state, 61; greatest local monthly range, 58, at Farmerville and Liberty Hill; least local monthly range, 28, at Shell Beach; mean daily range, 21.5.

Precipitation.—Average for the state, 4.60; for the northern section, 4.85; for the southern section, 4.41; greatest local monthly rainfall, 6.35, at Liberty Hill; least, 2.28, at Marksville; daily rainfall, exceeding 2.50 in any twenty-four consecutive hours, Vidalia, 3.10, on 8-9th; Lake Charles, 2.80, on 15th, and Abbeville, 2.70, on 8th; average number of days on which rain fell, 6.

Wind.—Prevailing direction, northeast.—R. E. Kerkam, Sergeant, Signal Corps, New Orleans, in charge.

MICHIGAN.

The month has been remarkable for the warm, pleasant weather and deficiency in rainfall.

Summary.

Temperature.—The mean for the month, 30.0, is 3.4 above the normal of Temperature.—The mean for the month, 30.0, is 3.4 above the normal of fourteen years. The temperature was reported above the normal in all sections. The mean daily temperature was above the normal on twenty days, below on seven, and normal on four days. The highest mean daily temperature in the past fourteen years, 53, occurred on the 19th, 1877, and the lowest,—8, on the 29th, 1880. The highest mean daily temperature for this month, 41, occurred on the 24th, and the lowest, 17, on the 21st. The highest mean daily temperature for this month, 41, occurred on the 24th, and the lowest, 17, and the lowest 17, 20, occurred in 1877, and the lowest 17, 20, occurred the lowest 18, 20, occurred 19, occurred the lowest 18, 20, occurred est mean monthly temperature, 37.2, occurred in 1877, and the lowest, 17 in 1876. The maximum temperature for the month, 58, occurred on the 26th, at Petersburgh, and the minimum, —5, on the 21st, at Omer.

Precipitation.—The average for the month, 1.79, is 0.86 below the normal of fourteen years. The precipitation was below the normal in all sections of of fourteen years. The precipitation was below the normal in all sections of the lower peninsula and 0.48 above the normal in the upper peninsula. The the lower pennsula and 0.48 above the normal in the upper pennsula. The precipitation was general on the 5th, 15th, 16th, 17th, 24th to 27th. The heaviest occurred on the 16th and 26th. The greatest, 4.25, was reported at Marquette, and the least, 0.31, at Arbela. Comparing the precipitation for this month with the records of the past thirteen years, it is found that the largest amount, 4.85, was recorded in 1884 and the least, 1.70, in 1880. The average amount of snowfall, unmelted, on the level, for the state, was 8.5; there was but very little remaining on the ground at the end of the month; only two counties, Emmet and Otsego, in the lower peninsula, reporting more than 2 inches, and in the upper peninsula it ranged from 2.8 to 12.

Wind.—Prevailing direction, southwest.—N. B. Conger, Sergeant, Signal Corps, Lansing, director.

MINNESOTA.

The characteristics of December were fair, pleasant weather, temperature much higher than usual, and precipitation deficient, especially in the centre of the state. From one to eight inches of snow were reported on the ground in the lower part of the state at the end of the month, while in the northern part the ground was bare, or only a trace of snow appeared.

Summary.

Temperature.—The mean for the month, 22.8, is 8 above the December normal. The excess in the northern part of the state was about 9, and in the south from 5 to 6. The highest temperatures were recorded on the 4th, 9th, and 23d, and the coldest days were the 12th, 13th, 19th, 21st, and 31st. The extremes of temperature were 58.1 at Saint Paul, 23d, and —19 at Pokegama

Falls, 13th; range for the state 77.1. At the end of the month ice was nine inches thick at points in central Minnesota and the ground was frozen to the depth of three feet.

Precipitation.—Except in the southern tier of counties the precipitation was deficient, and very much so in the centre of the state, including the stations of Moorhead, Pine River, and Duluth. The dates of precipitation in the northern part of the state were the 5th, 12th, 15th, 18th, 25th, and 27th; in the southern, 12th, 15th, 16th, and 24th to 27th. The heaviest daily rains were 0.77 at La Crosse, Wis., on the 16th, and 0.75 at Rolling Green on the 24th. Wind.—Prevailing directions, northwest and south.—Prof. W. W. Payne, Northfield, director; John Healy, Private, Signal Corps, Saint Paul, assistant.

MISSISSIPPI.

While the mean temperature of the air was not above the average for this month, the large amount of sunshine, the rather uniform distribution of tem-perature through most of the month, and the rapid warming up by south and southeast winds succeeding the cold waves combined to keep the ground Winter-growing vegetation was unusually vigorous during the month.

Summary.

Summary.

Temperature.—The mean of the state was 47, which is just the normal determined from all available records. In December, 1887, the mean was 46; the highest local monthly mean, 53, at Logtown, and the lowest, 42, at Louisville; the highest temperature recorded was 76, at Artonish, 14th, and the lowest, 16, at Louisville, 20th; the greatest daily range, 37, at Batesville, 7th, and the least, 1, at Starkville, 17th.

Precipitation.—The average, 3.18, for the state was quite evenly distributed as to time and locality. The normal rainfall of the entire state for December is 5.13; in December, 1887, it was 8.06. Rainfall exceeding 1.00 in twenty-four hours occurred at Canton and Vicksburg on the 9th, at Starkville and Artonish on the 15th, at Batesville, University, Water Valley, Canton.

and Artonish on the 15th, at Batesville, University, Water Valley, Canton, and Yazoo City on the 15th, and at Batesville on the 29th and 30th.

Wind.—Prevailing wind, north or northwest.—Prof. R. B. Fulton, University, director; M. J. Wright, jr., Sergeant, Signal Corps, assistant. Water Valley, Canton,

MISSOURI.

Summary.

Temperature. - The mean temperature for December was 85.4. The highest temperature reported was 70 at New Haven, and the lowest, 0.5, at Oregon. The average of maximum temperatures was 61.1, and the average of minimum temperatures 14.3, making an average range of 46.8. The highest temperatures occurred on the 5th, 10th, 28d, and 24th, and the lowest on the 19th, 20th, 27th, and 28th.

19th, 20th, 27th, and 28th.

Precipitation.—The average precipitation was 2.14, which is about the December normal. The greatest amount reported was 3.70, at Carthage, and the least, 0.70, at Maryville. In the state, as a whole, precipitation occurred on 21 days. The greatest number of days of precipitation at any place was 9 at Frankford. The amount of snowfall was reported as follows: Mound City, 9.75; Oregon, 9.5; Maryville, 7; Conception, 6; Langdon, 5; Kansas City, 8.75; Princeton, 2.5; Lamonte and Harrisonville, 2; Fayette, Wither's Mill, and Oak Ridge, 0.75, and Glasgow, Mexico, Sedalia, and Warrensburgh, 0.5.

Most other stations report snowfall too small to measure.—Prof. Francis E.

Ninher Saint Louis director: G. A. Weber, Sergent, Signal Corns, assistant Nipher, Saint Louis, director; G. A. Weber, Sergeant, Signal Corps, assistant.

NEBRASKA.

The month of December has been exceedingly warm and one of the driest for many years. Only had less precipitation. Only December, 1881, was warmer, and December, 1878,

Summary.

Temperature.—The most striking fact in the weather of the month is its exceedingly high mean temperature for southeastern Nebraska, which is 31.6, or 9 above the normal for December; this has only been exceeded since 1877 by December of 1881, when it was 33; the maximum for the month was 70, and this too was exceeded only in 1881; there have, however, been about the normal number of freezing days, but the temperature has fallen but little below zero during the month, although in preceding Decembers the mercury has fallen to -20, and once in 1887 to -28.

Precipitation.—Another dry month for Nebraska has been added to the list of dry months which began with September. Only a small area of the state, from the central to the northeastern portion, received over 1.00 of rain. The mean for southeastern Nebraska was 0.50, and is the least since 1878. Four Decembers, however, have had a smaller number of rainy days. The average of cloudiness has also been less than 1878.—Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Corporal, Signal Corps, assistant.

NEVADA.

The weather this month has been beautiful indeed, free from blizzards, high winds, fogs, &c., with a large percentage of bright sunshiny days. only ten cloudy days, eleven clear, and remainder fair.

Summary.

perature.-The temperature for the month was generally stationary and high, the mean being only about 3 less than for November. The extreme temperatures of the month were both reported from Elko; the highest, 73, on the 26th, and the lowest,—10, on the 31st. Lowest mean temperature was 26.3, at Mill City, and the highest, 53.6, at El Dorado Canyon.

Precipitation.—The precipitation generally throughout the state would

average fairly well. It was small at Carson City, Genoa, Dayton, Elko, Wellington, Hot Springs, Humboldt, Mill City, and Beowawe. Beowawe, the lowest, .17, and Mill City, the highest, .85. There was between 1.00 and 2.00 at El Dorado Canyon, Rioville, Palisade, Golconda, and Crane's Ranch, while at Tuscarora there was 3.27, Battle Mountain, 4.92, and Burner's Ranch, 6.00.—Prof. Charles W. Friend, Carson City, director; E. H. Thompson, Private, Signal Corps, assistant.

NEW ENGLAND METEOROLOGICAL SOCIETY.

The average temperature of the month at twenty-six stations, with back records for comparison, shows an excess of 3.5, the excess being greatest in the Northern States. The excess of precipitation at thirty-four stations averages 1.08, and gives 10.82 as the excess for the five months, August to December.

Summary Temperature.—Monthly mean, 30.3 (100 stations); highest monthly mean, 87.5, at Nantucket; lowest monthly mean, 22.6, at Berlin Falls; maximum, 69, at North Conway, 26th; minimum, —15, at Berlin Falls, 22d; range for New England, 84; greatest local monthly range, 76, at West Milan; least local monthly range, 40, at Nantucket; greatest daily range, 52, at Berlin Mills, 24th; loast daily range, 0, at Calais, 18th, Woonsocket, 16th. Precipitation.—Average for New England, 4.46 (124 stations); greatest, 7.26, at Saint John; least, 1.23, at Block Island.

Wind.—Prevailing direction, northwest (18 stations).—Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; Park Morrill, Sergeant, Signal Corps, assistant.

NEW JERSEY.

The mean temperature for December, 1888, is 2.4 above the average determined from past records of forty-eight stations. The warmest days during the month were the 5th, 17th, 25th, 26th, and 27th, and the coldest, the 21st, 22d, and 23d. The lowest temperature recorded in the northern portion of the state was 6; in the central, 7; and in the southern, 15. The average precipitation for the state is 0.07 above the average determined from past records of forty-eight state ins.

Summary.

Temperature.—Monthly mean, 34.9; highest monthly mean, 40.4, at Cape May C. H.; lowest monthly mean, 31.6, at Hanover; maximum, 66, at Trenton, 17th; minimum, 5, at Hanover, on the 22d; range for state, 61; greatest local monthly range, 56, at Trenton and Tenafly; least local monthly range, 38, at Ocean City; greatest daily range, 40, at Tenafly, 5th; least daily range, 0.2, at Egg Harbor City, 18th.

Precipitation.—Average for the state, 8.69; greatest, 4.95, at South Orange; least, 2.05, at Clayton.

least, 2.05, at Clayton.
Wind.—Prevailing direction, northwest.—Prof. George H. Cook, New Brunswick, director; E. W. McGann, Sergeant, Signal Corps, assistant.

NEW YORK.

Summary.

Summary.

Temperature. — The highest temperature for the month was 66, at Middleburgh, 27th, and the lowest was —17.5, at Canton, 22d. The mean temperature for the entire state was 29.6, the 26th being the hottest day, and the 22d the coldest. The temperature was above the normal at all stations, excepting at Oswego, where it was equal to the average monthly record of December during the past eighteen years.

Precipitation.—The average for the state was 3.09; the rainfall ranged from 3.09 above the average for December, at Boyd's Corners, to 1.60 below the average, at North Hammond. The greatest daily rainfall, 4.42, occurred at Boyd's Corners, 18th. The average number of days on which the precipitation was .01 or more inches of rain or melted snow was eleven. A thunderstorm was reported on the 16th at Queensbury and Wedgewood.

Wind.—Prevailing direction, northwest.—Prof. E. A. Fuertes, Ithaca, director; I. W. Brewer, Private, Signal Corps, assistant.

NORTH CAROLINA.

NORTH CAROLINA.

Summary.

Temperature.—Monthly mean, 41.8; highest monthly mean, 46.5, at Kitty Hawk; lowest monthly mean, 37.2, at Knoxville, Tenn.; maximum, 72, at Kitty Hawk, 9th; minimum, 15, at Mount Pleasant and Lenoir, 21st; range for state, 57; mean monthly range, 48.3; mean daily range, 18.2; greatest mean daily range, 24, at New Berne; least mean daily range, 10.6, at Hatters, highest monthly range, 52.5, at Mount Pleasant; lowest monthly range, 29.4, at Hatteras

Precipitation.—Average for the state, 3.74; greatest monthly rainfall, 7.40, at Chapel Hill; least monthly, 1.90, at Knoxville, Tenn.

Wind.—Prevailing direction, northwest.—Dr. Herbert B. Battle, Raleigh, director; H. McP. Baldwin, Sergeant, Signal Corps, assistant.

OHIO.

Summary.

Temperature.—The mean temperature of the northern section was 32.3; of the middle section, 33.1; of the southern section, 34.5; and of the state, 33.3. These means are 3.0, 3.3, 1.7, and 2.7 above the seven years averages of the sections and state. The maximum temperature recorded was 62.5 at Portsmouth, 26th, and the minimum, 1.0, at Jefferson, 22d. The greatest daily range was 38.0 at Quaker City, 25th, and the lowest, 2.6, at Cincinnati, 1st. This was the warmest December since the opening of the bureau.

Precipitation.—The mean rainfall in the northern section was 1.57; in the middle section, 1.65; in the southern section, 1.20; and in the state, 1.47. These means are 0.74, 0.97, 1.50, and 1.07 below the averages for the sections and state. Less rain fell than in any previous December, the principal deficiency being in the southern section, where the rainfall was less than one-

denciency being in the southern section, where the rainfall was less than one-half the usual amount. The greatest monthly rainfall was 2.69 at Jefferson, and the least, 0.75, at Springborough.

Wind.—Prevailing direction, southwest.—Prof. B. F. Thomas, Columbus, director; Lieut. Charles E. Kilbourne, secretary; C. M. Strong, Private, Signal Corps, assistant.

PENNSYLVANIA.

Summary.

Summary.

Temperature.—The mean temperature for December, determined from the tri-daily observations, was 32.6, which is slightly above the normal. The mean daily maximum and minimum, 40 and 25, respectively, give a monthly mean of 32.5. The highest temperatures reported were Pittsburgh, 62.1; Tionesta, 62; Meadville, 61, and Philadelphia, 61. The lowest were Columbus, —10; Clarion, —9, and Greenville, —4. The warmest period of the month was on the 26th, and the coldest on the 22d.

Precipitation.—The average rainfall, 3.14, is slightly above the normal. Some deficiencies occurred in the western part of the state. Most of the eastern counties received an excess. More than half of the monthly total for the middle and eastern parts of the state fell on the 17th, causing freshets. Flurries of snow were frequent. Many stations report only a "trace." The

Flurries of snow were frequent. Many stations report only a "trace." The greatest totals for the month are: Meadville, 21; Eagle's Mere, 20; Wellsborough, 13; Tionesta, 13; Girardville, 11; Somerset 7; Uniontown, 7, and Columbus 6. All of the snow melted rapidly and none remained on the ground at the end of the month.

Wind.—Prevailing direction, northwest.—Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, Sergeant, Signal Corps, assistant, in charge.

SOUTH CAROLINA.

Summary

Temperature.—Mean for the state, 42.7; highest monthly mean, 50.5, at Timmonsville; lowest monthly mean, 38.5, at Cedar Springs; maximum, 71, at Aiken, 26th; minimum, 13, at Cedar Springs, 21st; range for the state, 58. Precipitation.—Mean depth of rainfall for the state, 3.56; greatest, 5.12, at Brewer's Mines; least, 2.12, at Charleston; greatest daily rainfall, at Brewer's Mines, 2.63; average number of rainy days, 6.7, against 9.7 for December, 1887.—Hon. A. P. Butler, Columbia, director; H. C. Seymour, Private, Signal Corps assistant nal Corps, assistant.

TENNESSEE.

The meteorological conditions of December were marked by no special features except, perhaps, the small amount of rainfall and the total absence of any electrical disturbance—not a single thunder-storm being reported.

Summary.

Temperature.—The mean temperature was 39.6, about the December mean for the past six years. The highest local mean was 43, at Savannah, and the lowest, 36.8, at Greeneville. The highest temperature was 70, on the 8th at Savannah, and on the 25th at Franklin, and was the lowest maximum observed in December during the past six years except that of 1887, which was 65, the highest being 78, in 1883. The lowest temperature observed was 9, on the 20th at Fostoria, and was several degrees above the average December minimum. The highest temperature was recorded at most of the stations on the 25th, and the lowest on the 20th and 21st in the eastern division, and on

was 3.60, at Greeneville

Wind.—Prevailing direction, northwest.—J. D. Plunket, M. D., Nashville, director; H. C. Bate, Signal Corps, assistant.

TEXAS.

The features of the month were the mild character of the weather and the slight excess in precipitation reported in the northern and central counties. In the southern and southwestern counties there was less than the usual

amount of precipitation. The rainy periods were the 7th and 8th, 14th and 15th, 25th and 26th, and 28th to 31st. Snow did not occur except in some of the northwestern counties, and the amount did not exceed one-half inch.

Summary.

Summary.

Temperature.—The average temperature, 51.7, was considerably above the seasonal average, and 2.5 lower than the average of last month. The mean of maximum temperatures was 60.4, and of minimum temperatures, 42.9; maximum, 84.2, at Rio Grande City, 15th; minimum, 19.4, at Fort Elliott, 30th; absolute range of temperature, 64.8; greatest monthly range, 52.6, at Fort Elliott; least monthly range, 26.8, at Brownwood; average range, 41.5

Precipitation.—Average for the state, 3.43; greatest amount of precipitation in any consecutive twenty-four hours, 3.49, at Brazonia, 30th; greatest monthly precipitation, 7.57, Palestine; least monthly precipitation, 0.50, at El Paso.—S. O. Young, M. D., Galveston, director; Allen Buell, Sergeant, Signal Corps, assistant.

Signal Corps, as									47	San Miguel† San Pedro†	75	47	59
Meteorological re	coro	l of v	olunt	ary o	bservers and Army r, 1888.	pos	it sur	geons	, No-	Santa Barbara† Santa Cruz† Santa Monica.†	7I 78	42 42 42	55 57 55
The maximum and	min	imum	temp	erature	es at stations marked tandard instruments.	thus	(*) are	e trom	read	Santa Paulat	75	38 36	59 51
	Te	empera	ture.	1.			mpera		j.	Sims †	55 61 74 70	30 23 32 42	41 49 55
Stations.	ax.	j j	ean,	Precip'n.	Stations.	Max.	in.	ean	Precip	South Sidet	68	36	52 50
	M	M	Me	100		M	X	M	4	Stockton†	4.3	12	49 31
Alabama.	0	0		Ins.	California—Cont'd.	0	0		Ins.	Susanville † Tehachapi;†	70	26	38
Auburn	66	20 10	46-1		Banning	74	36	51.0 47.2		Templeton	07	31	43
Bermuda Citronelle	73	23	46.2	4-24	Beaumont	70	38	53·7 48.8	4.19	Tracy T	05	40 .	50
Decatur					Benicia Barracks Bishop Creek †		37	48.8 38.8	3-82	Trower 4	436	36	53
Florence Gadsden	63	19	44-5 43-1		Bordent	60	23 35	48.9	1-21	Tropico † Truckee † Tulare † Turlock†	50	12	34
Greensborough	68	30	47.9	2-15	Brentwoodt	68	32	51.7		Tulare †	60	34	50
Livingston Motes	67	10	45.6	3-40	Brightonf	-62	39 35	49-9	1.72	Vacaville	67	45 37	51
Mt. Vernon B'ks	72	21	49.8	3-77	Byront	60	34	53.2	1.81	Valley Springst	65	37	49
Mount Willing New Market	66	13	49.0		Colegrove	08	33	52.7		Volcano Springs † Westley †	0.5	30	52.
Selma	61	30	47.8		Coles t	59	24	40.0	1-32	Whittierf	680	48	55
Talladega	66	25	47·1 51·2	3-93	Colea t	65	34	47.6		WILLIAMS T.	102	34	47
Troy Tuscaloosa	68	18	51.0		Corningy	F) 2	30 43	57-2	5-37	Willow	68	40	51.
Tuscumbia	67	19	42.0	2.00	Davisville† Delano†	69	38	53-5	4-20?	Woodland t	72	38	50.
Union Springs Valley Head	63	13	47.0				38 37	51-9	10-56	Colorado.	40	- 6	19.
Arisona.		-	40		Dunnigan †	59	39	52.6	5.88	Aspen			20.
Antelope Valley Benson	60	32	49-6	2-95 1-03	Dunnigan †	68	30 36	44-7	2-80	Canyon City Castle City	65	15	39-
Casa Grando	75	40	56.5	0.75	Elmirat	70	40		4-47?	Como (near)	46	2	23.
Cedar Springs				2.50	El Veranot	63	40	53.0	7.58	Courser T	50	-10	18.
Eagle Passt Fort Huachuca		26 26	41-3	3.13	Emigrant Gap.t Esperanza.t	55	40	48-3	6-29	Delta † Dolly Varden Mine	35	- 5	24-
Fort McDowell	74	31	52-4	3.29	Farmingtont	59	35	48.3	1.75	Durango			
Fort Mojave	68	32	49-4 38-4		Florence 1 t	70	30 42	58.4	7.82	Fort Collins	56	- 1	30.
Mount Huachuca	54	23	38-1	1.42	FOISOM T.	Ph4	40	51.9	4.74	Fort Lewis	68	6	34-
Pantano	71	37	48- I	0.50	Fort Bidwell	56	29	37.2	0.77	Georgetown	52	_ IO _ 2	31.
Prescott Junction		30	51.8		Fort Gaston	64	43	42-6 52-6	4-55 5-04	Glenwood Springs . Greeley † Gunnison	66	3	30.
Teviston		*****		1.08	Fresnot	71	38	54-3	1.75	Gunnison	60	*****	16.
Texas Hill Tombstone		34	51.7	3.60	Georgetown	68	37	46-9	7-99	Husted	0.2	7	31.
Tucson (1)	75	48	03- I	3-59	Gilroy t	66	34	51-4	2-10	Leadville	48	- 3 - 6	20.
Fucson (2) Williams	57	3	22.7	1.90	Goshen†	62	33	49.0 46.1	1.13	Monte Vista	39 51	8	16.
Winslow	56	- 22	35-6	3.80	Hollister f	79	36	53-5	2.00	Ouray	62	13	34-
Arkaneas.	64	10			Hornbrookt	62	32	41.6	1-11	T. S. Ranch	*****	*****	28.
Altus m	63	24		3-04	Ione t	80	34	55.7	2-48	Birmingham			
Arkansas City				4-65	Kings City† Keeler† Keene†	75	34	52.3	2-53	Canton Ciark's Falls	.58	3	
Camden	75	30	43.5	4-64	Keene †	66	32	43-5	2-29	Colchester	59	6	31.
Dardanelle				3-40	Knight's Landingt.	62	33	48.8	1.83	Hartford (1)	56	6	31.
Dayton	65	20 19	44-9	5.10	Lathront.	75	35	48.8	4.82 3.21	Hartford (2) Lake Konomoc		*****	****
Eureka Springs	68	28	47-2	3-59	Laurel †	68	39	53.0	6.59	Mansfield Middletown	57	2	30.
Forrest City	70	31	50-7	1.25	Lemooref	08	37	46-9 50-0	2.87	Middletown New Hartford *	58	6 - 2	31.
Fulton	602	1.0	47.7	4.69	Lewis Creek*† Livingston†	60	38	49-2	2.10	Shelton	55	8	30.
Helena(r) Helena(2) Hot Springs	64	18	43-5	3.70	Los Angelest	77	41	55.6	6.67	Shelton	56	3	29.
Hot Springs		25	*****	6.99	Mammoth Tankt Martinest	75	40 37	52.0	0.87	Uncasville Voluntown !	56	6	32.
Lead Hill	65	16	39-6	2.31	Menlo Parkt	63	38	53-1	2-59	Wallingford			
Little Rock B'ks Lonoke	70	23		4·43 3·38	Merced.t	87	36	51.8	2-12	Waterbury W. Simsbury	02	0	30-
Madison	,,,,,		47-6	0.19	Montaguet	65	23	40-4	0.30	Dakota.			
Newport				3.27	Monterey f	70	40	55-2	2.76	Brookings	58	- 5	24.
Portia	61	16	41.6	7.16	Napat Newhall t	74	34	51.0	5.30	Davenport Fort A. Lincoln	59	-4	20-
rescott	78?	42?	60-6?	0.23?	Newman t	70	35	53-1	1.59	Fort Buford j	50	-11	20-
ituttgart	72	16 21	42.5	4.74 1.88	Nicolaus	65	36 38	49-9	5.25	Fort Meade	43	-14	15-
Texarkana	67	20	45-3	5-12	Nilest Oakland(1)t	66	40	52.1	4.86	Fort Pembina Fort Randall	68	4	27.
British Columbia.					Oakland (2)	63	41	52.3	4.82	Fort Sisseton	45	- 3	27.
New Westminster. California.	30	25	41.9	10.79	Oroville Pajarof		35 43	55-8	7.91	Fort Totten	54	- 5	20.
Alcade t	66	35	49-1	1.68	Paso Roblest	66	28	47-9	2.80	Fort Votes	62	-11	21.
licatraz Island	60	42	51.8	6-10	Petaluma †	64	37	51·3 46·8	5-83	Garden City Grand View†	55 68	- 4 18	21.
naheimt	76	44	60.9	4.19	Portervillet	64	35	50- I	1.62	Gallatin *f	48	-10	34-9
Antioch†	63	39	47.6	2.88	Presidio of San F Red Bluff t	69	38 38	54-2	8.58	Goddard † Kimball * †	58	0	25-4
Athlonet	65	40 36	50-2	4-31 1-59	Redding.t	77	34	50-5	7.92	New England City !	62	- 8	18-1
Auburn †	69	33	47-1	5.82	Rocklint	58	33 38	53-9 48-5	3-94	Parkston	65	- 2	24-0
Bakersfield t	69	37	51.7	0.82	Rumsey.t	68	35	50-8	5.15	Spring Lake * †	30	- 8	17.2

	Stations.	Te (F	mpera ahrenb	ture. neit.)	p'n.	Stations.	Te (F	mpers ahreni	ture.	p'n.
		Max.	Min.	Mesn	Precip'		Max.	Min.	Mean	Precip
	California-Cont'd.	0	0	0	Ina.	Dakota-Cont'd.	0	0	0	Ins.
	Sacramento(1)f	65	38	48.7	4-48	Webster	61	- 9	22.9	0.40
t	Sacramento(2) Salinas(1) †	63	40	46-2	5.88	Woonsocket	63	- 9	22.1	0.08
	Salinas (2)f	67	38	51-4	2.20	Kirkwood *		16	33.0	
t	Sanger Junctiont San Ardot	68	35	51.9	2.02	Newark	56	13	34.2	4-44 0-58
t	San Fernandof	76	32	55-1	5-40	District of Columbia. Distribut's Res. * 1.	-		33.2	
	San José † San Mateo †	50	39	50.6	4-04	Kendall Green * †	57	17	35.8	3.87
,	San Miguelt	65	32	50-9	2.11	Receiving Res'v'r*	57	18	33.0	
	San Pedro† Santa Barbara†	75	47	59·1 55·8	3-18	Wash. Aqueduct * 1 Florida.	61	19	*****	****
	Santa Cruzt	71	42	57-1	5-07	Altamonte Springs.	79	28	57-2	6.43
	Santa Monica.† Santa Paula†	78	42 38	55.8	6.49	Alva*	81	29	56.0	2.60
	Santa Rosa†	69	36	51.5		Fort Meade * †	80	23	53-5	9-56
	Simst	55	30	41.0		Homeland Kissimmee City * .	80	29	59.8	6-70
	Soledad†	74	32	49- I		Manatee	83	34	56.4	5.36
	South Sidet	70	42 36	55.0 52.1	2.90	Matanzas Merritt's Island	72	32	56.0	4.27
	South Vallejof	68	37	50-2	3.01	St. Francis B'k's	73	34 29	59.5	8.55
	Stocktony	55	42 12	49-6		Tallahassee e	74	25	52-0	4-15
	Summit†	54	26	31.7	I.30 I.89	Andersonville	8a	24	51.6	2.64
	Tehachapi;†	70	23	39-0	3.65	Athens	62	24	42-1	4.64
,	Templeton† Towles †	60	31	50-3	3-20	Duck	72	15	39-3	4.58
)	Tracy t	65	40 .	50-2	1.71	Forsyth*	68	30	50.7	1.20
	Traver†	77	36	43-2 53-1		Marietta	61	20	41.5	5.24
	Truckee †	50	12	34.0	0.08	Quitman	69	26	51.5	4-35
2	Tulare †	67	34 45	50.2		Idaho. Boisé Barracks	62	9	35-4	1-42
,	Vacaville t	67	37	51.6	5-35	Fort Sherman	52	9	33-2	3-75
	Valley Springs† Volcano Springs †	72	37	49.7	0.14	Lewiston	53	14	37.5	0.64
	Westley T	05	40	54-9	1-35	Aledo	58	13	30-1	2.09
	Whittiert	62	48	55-4	2.67	Auroras Beason	67	12	31.0	2.61
	Willow	68	34	49.8	4-11	Belvidere	53	14	30.4	2.37
	Winters t	68	40 38	51-3 50-1	6-44	Brush Hill	50	13	36.5	2-40
	Woodland t Colorado.					Camargo	58	16	32.5	2.93
	Alma		- 6	19-9	0.02	Centralia	59 54		34.0	2.21
	Canyon City	67	15	39-8	0.00	Centralia Charleston *	52	18	33.5	2.37
	Canyon City Castle City	65	0 2	29-4	0.15	Collinsville Dwight	58		36.0	2.03
	Coulter †	56	-16	23.2 18.5	0.60	Fairfield	59		40- I	2.53
1	Coulter †	46	8	24-7	0.67	Flora	56	18	36-0	1-97
	Dolly Varden Mine Durango	33	- 5	******	0.60	Fort Sheridan Gibson City	58	5	30.9	1.75
	Fort Collins	68	4	30.4	0.16	Golconda	64	20	38.3	2-14
	Fort Lyon	68	- 1	26.6 34.9	T. 19	Grand Tower	54	10	34-5	3.00
	Georgetown	53	IO	31.2	O-II	Griggsville	58	16	34-0	2-47
1	Glenwood Springs . Greeley †	52	- 2 3	30.6	0.06	Hennepin	56	11 20	31.7	2.22
	Gunnison			16.5	0.00	Jordan's Grove	58	20	36.2	2.49
1	Husted	62	7	31.3	0.02	Kampsville Kankakee	64	17	34-4	1.65
1	Leadville	48	- 3 - 6	20-4	0.31	Lacon	55	18	34-5	2.67
1	Monte Vista	39	- 6	16.8 26.1		Lake Forest Mahomet	50	16	30-7	2.04
1	Ouray Rocky Ford	62	13	34-3	0.01	Mattoon t	51	15	33.8	2.25
Ì	T. S. Ranch		*****	28.6	0.82	McLeansborough Mount Carmel	60	16	37 - 1	2-47
1	Birmingham				5.76	Mount Morris †	52	14	31-3	2.13
1	Canton	58	3	*****	5-45	New Athens Nunda	56 48	22 10	36.5 27.1	2.65
1	Ciark's Falls Colchester	59	6	31.6	4-21	Old DuQuoin	59	20	37.8	2.50
1	Hartford (1) Hartford (2)	56	6	31.0	5-91	Oneida	56	19 14	34-9	2.65
-	Lake Konomoc				5.31	Oquawka	54	18	33.9	2.80
1	Mansfield	57	6	30.0	5.28	Oswego t	46	11	30.3	2.22
1	New Hartford *	53	- 2	25-7	5-55 5-81	Palestine	56	20		2.22
1	Shelton	55	8	30.0	5-91	Pana	58	18	36.7	5.58
I	Thompson Uncasville		3	29.2	5-39	Pekin	60	14	33.8	2.32
Ī	Voluntown !	56	6	32.8	4-84 5-80	Philot	57	18	34-2	2-39
1	Wallingford Waterbury	62	0	30-7	5.84	Pontiae	54	13	32.1	4-24
Î	w. Simsoury				5.40	Richview	55	12	36.8	2.24
1	Brookings	58	-5	24-0	0.05	Riley	52	11	27-9	2.58
1	Davenport	48	-4	20-3	0.05	Rock Island Ars'l	62	12	32.9	1.19
1	Fort Buford i	59	-11	24.6 20. I	0.10	Sandwich * † South Evanston	54		32.6	2.36
1	Fort Meade	55	0	24-5	0.17	Sumner	60	18	32.2	1.40
1	Brockings	43	-14	15.2	0.48	Sycamore†	50	20	36.0	2.16
1	Fort Sisseton	45		22.3	0.08	Wapella	50	16	34.0	3.00
-	Fort Sully	68	- 6 - 5		0-26	Watseka	52	II	31.6	1.92
1	Fort Totten Fort Yates	63	-11	21.8	0-20	Willow Hill	56	20	36.6	1.85
1	Garden City Grand View†	55	- 4 18	21.6				15	36-4	X-53
ĺ	Gallatin *1	48	-10	34.9	0.22	Windsor(1) Windsor(2) Winnebago	55	17	34.6	2.34
	Goddard t	cR.	0	25-4		Winnebago	54	12	30.0	2.65
ı	Eimball # 4	30				Woodstook	49	6		
	Kimball *† New England City † Parkston *	62	- 8		0-20	Woodstock Indiana. Angola	48	6	25.7	2.55

Meteoroto	ysco	se 2'60	ara ()	eom:	ntary observers, &c.	-0	Ontint	iou.		Meleuroloj	yecu	1 7 EC.	" to 0)	COUNT	itary observers, &c.	·	OHEIR	icu.	-
Stations.			rature. nheit.)	cip'n.	Stations.	(I	em per Pahren		ip'n.	Stations.		ahren		dp'n.	Stations.		ahren		
	Max	Min.	Mean	Prec		Max	Min	Mean	Precip'		Max	Min.	Mear	Precip'		Max	Min	Mean	
Indiana-Cont'd.	0	0	0	Ins.	Kansas-Cont'd.	0	0	0	Inc.	Louisiana-Cont'd.				Ins.	Michigan-Cont'd.	0	0	0	1
lutlerville * f	60 62	12			Englewood	70 60	12	39-4	0. 26 1. 20	Vidalia West Melville	74	21 26	51.8	5-92	Arbeia	45	*****	30-3	-
Columbia City	52	10			Fort Leavenworth :	62	5	35.6	1.56	Maine.		-	1	1000	Bell Branch	54	9	31-3	3
olumbus	53	10			Fort Riley	60	5	35-7	0.02	Bar Harbor Belfast	52 48	- 2	28-8	5-98	Benzonia Benton Harbor	53	13	30.0	
rawfordsville	600	87		0.50	Gibson	68	10	34-7	0.80	Calais		-4	27-4	4-24	Berlin	51	2	30.1	
elphi e Gonia Springs	54	20			Globe t	59	12	34.2	0.05	Fairfield	53 48	- 6	27.8	3.11	Berrien Springs Big Rapids	48	IO	30.0	,
vansville			** ****	. 2.30	Grainfield	62	18	*****	0.00	Kenebec Arsenal Kent's Hill	55	2	30-4	0.50	Birmingham	52	3	29-6	5
armland untingburgh	56	20			Grenola	68	12	36.2	2-45	Lewiston	50	- 3	25-4	3.25	Bronson	52	10	31.7	
untington				. 8-43	Gove City	63	4	32.7	T.	Orono	61	- 3	27.9	4.96	Cassopolis	44	7	24-1	
effersonville	62	14			Havensville †	70	- 2	30-7	0.65	Maryland.	4o	1	30-5	*****	Chase	48	17	32-9	
a Fayette	54	11	33-0	1.68	Halstead	57	13	37-7	0.48	Barren Creek Spgs . Cumberland	58	14	37-2	1.74	Colon	53	10	31.1	
		13	1 00	-	Independence T	62	16	37.0	3.89	Faliston	55	13	35.1	4-78	Columbia	54	18	34-5	
arengo	60	22	0.00		Kanopolis	66	2	*****	0-12	Fort McHenry	54	15	37-5	3-22	Concord	52	12	30.4	
anay ount Vernon(1)	55	7	31.9		La Harpe of	57	16	34.69	2.18	Gaithersburgh	48	10	30.6		Deer Lake	48	10	29-0	1
ount Vernou(1)	58	20	38-3	2.09	Lawrence	60	7	34.8	1.78	Galena f	61 64	15	35-2	3-04	East Saginaw		8	30.0	
inceton	58	16			Leoti			36.0	0.71	Great Falls * †	58	15	30.7	3-59	Fitchburgh				
chmond	54	16	32-3		Manhattan * 1 McAllaster	66	10	32.0	0.20	McDonogh	56	17	35-9	3.61	Fletcher	45	3 4	27.6	
shville			34.8	F 600	Monument	70	8	******		Mt. St. Mary's Col	50	11	34-9	3-30	Flint Fort Brady	43	- 3	23.8	
em f	55	17	35-5	2.04	Morse of	71	15	37-9	2.00	Woodstock	68	13	34-1	1.90	Fort Wayne Fort Mackinac	53	4	26.5	
mour	60	20			Oakley	68	18	32.2	0.20	Amherst Ex Sta	56	4	30-4	- 378	Grand Rapids	50	11	32-3	
celand		14			Oberlin	68	******		0.00	Amherst Beverly Farms	58 51	-4	31-9	4-29 5-58	Grape Gulliver Lake	42	5	27.6	
VB.Y	59	15		1.16	Quinter	66	13	*****		Blue Hill Obs'y (1).	57	2	30-5	5-25	Hanover	53	13	31-5	
rthington		****		. 2.61	Rome	62	18	39-0		Blue Hill Obs'y(2). Blue Hill Obs'y(3).	58	5	32-4	5-50	Harrisville	49 52	17	31.6	
sdian Territory.	-	17	1		25m111ng. 4	69	14	38-8	0.30	Boston	39			5-40	Hastings	51	13	33 0	
stonment	****			. 0. 16	Santa Fé	70	12	39-7	0.00	Cambridge (1) Cambridge (2)	57	4	32.8	4-78	Hillman	42	*****	27-1	
rt Gibson	60	19	44-9		Beneca	63	19	32.6	0.55	Chestnut Hill	58	4	32.8	5-36	nightand Station	48	8	30-1	
t Reno	68	19			Toronto	66	7	34-4	0.11		55	9	33-2	5-60	Hudson	53	10	30-4	
aldton f	28	17	50-6		Ulyanen		15	33.0	0.12	Deerfield(1)	54	2	29-1	3.68	Jeddo	47	II	31-4	
HOWE (1)	23	34	54-4		Victoria Wakefield * f	60	17	*****	0.10	Deerfield (2) Dudley	54 58	4	30-4	5-33	Kalamazoo Kenockee	52	12	31.8	
foura.	*****			5-73	Wa Keeney	66	15	37.8	0.36			7	33.6	5-25	Lansing	SI	8	30-2	
ana	57	5	27.0		Walker	68	10	*****			55 58	4	32.6	5-61	Lathrop	43	2	30.8	
es f	59	4	28-3	0.40	Wallace Washburn College .	63	- 3	31-3	0.04	Fitchburg(1)	54	1	29-9	5-36	Marshall f	50	15	32-4	d
lar Rapids	57 60	6	28.8		Wellington	63	18	40.0	0.87		55	0	31-2	4-87	May Mio	48	- 2	28.5	
MOD	50	10	32-4	3.05	Winona	64	12	******	0.40	Gilbertville	57	- 2	26-1	5-22	Montague			20.9	
sco	53	1	23.9	2.20	Yates Centret	66	7	35-0	1.88	Groton	56	2	30.7	4-64	Mottville* Newaygo		10	32-0	
TOATK		11	26.7	. 3.07	Ashland	64	8		1.00	Holyoke	58	4	31.8	4.85	Noble		*****	20.9	
Moines		10	31-4	2.50	Bowling Greenj Burnside	70	15	39-9	1-19		55	1	32.0	5.66	Olivet	52	- 5	30.6	
ader f	52	- 6	27.3	2.90	Catlettsburgh			*****	2-34	Leicester	56	- î	28.9	5.76	Ovid	50	10	30. I	1
t Madison t	54	- 2	33-4	2.41	Eddyville		14	33-5	0.81		53	6	******	5-38	Petersburgh	58	10	31.4	
ett f	52	- 2	21-3	0.45	Frankfort	64	13	35-5	1.64	Lowell	56	3	31-4	5-31	Pulaski	52	13	31.8	-
nwood (near)	76	2 4	32.2	0.59	Franklinf	65	23	40- I	1.49		56 69	2	28.2	5-10	Roscommon Saint John's	46	- 4 IO	30.5	
anell	56	7	29.0	1.40	Madisonville T	62	19	38-6	1.26	Lynn(2)	54	4	32.1	5-46	Saint Louis	50	9	30-1	1
nptos f	55	4	24.5	0.94	Millersburgh Newport Barracks .	63	19	36-2	1.10	Mansfield	55	5	31.0	5-44		52 49	6	31.8	
ependence * f		7	28.9	2.03	Owenton d	58	15		0.00	Middleborough	59	6	32-4	4-14	Traverse City	50	9		
a City	53	13	29.8	1.86	Paducah	62			0.65	Miltonf	59	6 - 2	33-4	5-18	Washington	50	2	29-8	
son of	60.	6	31.5	0.99	Williamsburgh		23	39.8	1.45	Mount Nonotuck		*****	*****	4-70	Williamston	50	IO	32-5	ì
uoketa*	87	10000	28.6	2.23	Louisiana. Abbeville			62.2	6-10	Mystic Lake Mystic Station			*****	5-42	Ypsilanti (1)† Ypsilanti (2)	57	11 4	30.6	
int Vernon f	57 56	3 9	28.2		Alexandria		30	*****	5-43	New Bedford (1)	52	4 8	32.8	3-33	Minnesota.			-2.2	
200	60	9	31.2	2.84	Amite	71	24 21	48-1	4-52 5-70		55	8 7	33-4	3-50	Alexandria Delano	56	- 2	23-3	J
ola f	31	3	22.3	3.10	Clinton	68	19	40.0	4-75	Newburyport (1)	49 58	3	32.2	4-70	Farmington	58	6	24.8	1
WIOONW (I) M	60	12	33.7	1.90	Convent		24	49-2	5-55	Newburyport (2) Northampton	52	5	30-4	2.95 4.59	Fergus Falls Fort Ripley		*****	*****	
716 V T	Six	4	26-4	0.33	Crowley	74	25		5-72	Plymouth	59	5 7	35-2	3-93	Fort Snelling	59	- 8	25-4	1
hland	58	4	28.1	1.70	Deihi	60	25		4-55		54	10	34-7	5-52		55	- 0	21-4	1
hington	58	13	31.1	2.19	Farmerville	80	22	*****	5-05	Royalston	58	0	34-3	3.62	L. Winnibigoshish.			25·5 18·7	l
Aansas.	65	4	*****	10.0	Franklinton	73	28		4-78	Rowe	52	- 4	32.4	4-35	Leech Lake Le Sueur &	52	-14	18-6	l
ngton	****	****		0-42	Grand Cane	72	20	47.8	5.70	Salem (2)			*****	5-50	Mankato	58	6	24-4	l
asta	70	17	39-2	0.69	Grand Coteau Habnville*	71	30		4.03	Somerset †	58	6	33-2	4-13 5-38	Minneapolis (1)	56	- 2	23.8	I
lena * f	60	17	36-5	0-50	Houmar	72	24 26	52-2	3-53	Springfield	56	4	30.6	4-96	Minneaplois (2)	57	4	25.5	I
clin	68		******	0.20	Lake Charles Lake Providence	75	32	53-1	4-00	Taunton (1) Taunton (2)	58	5	33-3	3-97	Morris Northfield	57	- 3	21-1	I
AREX BUNDER	72	10	*****	0.15	Liberty Hill	77	37	49.0	4-54	Taunton (3)	58	5	33.0	3.86	Ortonville				J
ker Hill	62	14		*****	Maurepas	72	25	51.2	3.85	Waltham	52	- 2	26.0	5-72	Pine River Pokegama Falls	45	-18 -19	18.5	l
eiro	68	10	*****		Marksvillef	70	32 25		2.46	Wellesley	53 58		33.0	6.83	Red Wing Redwood Falls	54	9	26.0	
on City	6a	6	33-5	0.20	Minden	71	20	51.1	4-58	Westborough	60	3	34-0	4.98	Redwood Falls Rolling Green	53		22.5	l
r Point	6a	5	32-5	0.08	Monroe	70	30		4-56	Worcester (1)	56	1	27-7	5-15	Tracy	33	-4	23.5	١
Water	6a	5 12	26.8	0, 20	New Iberia	78	29	57.8	4-47	Worcester (2)	61	3		****	Mississippi. Artonish Plantation				l
ordia (near)	70	4	34-4	0.20	Plaquemine	75	24		4-79	Guanajuato	72	37	58-1	0-12	Batesville	68	26	52.0	
way	***		ARRARA	0-37	Point Pleasant	67	26	50-5	5.50	Leon	73	35 36	55.0	T.	Canton		22		ŀ
MEGG	OB.	14	35.8	0.80	Rayville		22		4-76	Topo Chico	75	36 55	52-7	1.00		68	28	53.0	ŀ
Falls	64	10	35-9	0.50	Saint Martinville (6g	43	54.0 .	****	Michigan.				- 1	Louisville f	65 68	16	41.8	ŀ
worth	68	16	39.0	2-41	Shell Beach	71	27	54-5			55	6	30.6	1.53	Pearlington	66	30	51.0	
	Ken				Thibodeaux				5-10	Alma	50	15	29.5	1.61	Starkville	63	20	45.0	

Seations		Te	mpere	ture		tary observers, &c		mpera	-	1		Te	empera	ture.		li li	Te	mpera	ture.	1
Manager_Loury	Stations.				p'n.	Stations.			eit.)	p'n.	Stations.	(F	ahrenh	eit.)	ip'n.	Stations.				1
Face Cally	1	Max.	Min.	Mean	Preci		Max.		Mean	Preci		Max.	Min.				Max.	Min.	Mean	9
Section Sect								0	2							Oregon-Cont'd.			0	1
Manager 1966 1976	soo City		*****	*****		Rioviller					North Hammond	50		28.0	1.58	Mount Angel	58		42.9	36
Second S	Missouri.					Tecoma †	55	0			Palermo *	50	- 5			Parkers	58	27	39-7	2
sundiscripting 9	rthage			*****	3.70	Tuscarora †	56	-7			Pendleton Centre*†	48	3	29.0	*****	Pennsylvania.				
yeste	nceptionteelsior Springsof	59	13			Wells	80				Potsdam t	50	-16	25.8	0.98?	Bethlehem	55		37.7	3
ankford* 90 10 10 12 12 12 12 12 1	vette	65	12	35-7	2.10	Wellington	49	II	*****	0.60	Plattsburgh B'ks	52				Carlisle	56	13	34.8	2
Second	ankford * f	59	11		2-21	Antrim		-4	*****		Queensburyt				3.85	Catawissa	60		34-4	3
analbal	and Pass	64 <i>j</i>		34-5		Berlin Falls	50	-15	22.6		Savona	54	- I		2-34	Clarion(t)	55		32.3	
TRIBADE 1.0 1.	nnibal	50	18	*****		Berlin Mills	60	-11	23.6		Setauket *	58	10			Clarion(2)	60	9	32-4	5
chewille. 64 16 34.0 15.0 Handwerf. 35 -7 8.2 29 20 molecule. 53 -7 8.2 29 20 molecule. 54 1.0 24.1 20 20 Corpy. 53 -1. 39.5 31.0 molecule. 54 1.0 24.1 20 20 20 Machester [1] . 32 -1 29.5 31.0 White Failant. 55 6 34.6 4.3 5.5 4.4 20 20 20 20 20 20 20 20 20 20 20 20 20	rmann		*****		2.46	Chesterfield	49	-12		3-92	South Canisteo * 1 .	56	-	31.0	****	Columbus	52	-10	29-2	
monete 6	ksville					Hanover	52	-7	26.2		Waddington	42	-10	24.7	1.00	Corry	52	-10	29-6	13
Section 10	kenan * †					Lake Village	57				West Point	58				Drifton	57		30.0	
Francher 60	ngdon			*****	1.10	Manchester(2)	53			3-57	White Plainst	50		34.6	4-41	Eagle's Mere	47	-4	25.6	1
und City	xico	60				Nashua	57	I			North Carolina.					Eastont		6	*****	. 4
# Haren						North Conway	69	- 3	27.0		Asheville			******		Franklin *	50		30.7	2
wwood imam 50	w Haven			40.8	2.50	Plymouth				2.28	Chapel Hill	69		41.2		Freeport			*****	
wood (near)	wood		******			Stratford	58	-8	26.2	2.30	Hot Springs	60	17	39-5		Girardville	53	7	34.0	1
Weight Section Secti	wood (near)			*****		Walpole	50			2.88	Mount Holly	59				Grampian Hills	50	0	29-1	. 3
Continue	rk†	57	16	37.8	2.50	Weir's Bridge				2.34	Mount Pleasant	68	15	39.8	3.60	Greenville	56	-4	36.3	1
at Charless (1)	nceton	63			3-35	New Jersey.	****	******	*****	3-33			20			Honesdale	53		33.0	1
Street	at Charles (1)				2.80	Beverly Billingsport L. H.			35·9		New Berne	67							33-3	1
Section Sect	annah		*****		1.57	Cape May C. H	63	15	40.4		Statesville	60	17	38.6	3-30	Lancaster	59	9	34.8	1 3
						Egg Harbor City					Olao.		17	40.0		Lock Haven	55	5	33.3	1
Here's Mill	rrenton	57	17	32.9		Freehold		6	34.2	3.08	Akron	57	10			Lock No. 4				
A selandolino 61 63 65 66 66 66 67 67 67 67	ther's Mill					Hanover	51	5	31.6		Athens	62		34.8	1.19	McConnellsburgh	60	11	33-5	
Calmier*. \$ \$ = 9 x = 0.		60	-14	22.1	0.25	Highland Park	57	7			Bellevue †	55				Meadville(2)	61		31.8	1
	t Assinaboine	61		26.0	0.60	Imlaystown			34-4	2.62	Caledonia			*****	1.09	New Bloomneld	58	9	33-2	Г
*** *** *** *** *** *** *** *** *** **	t Keogh	54				Lambertville					Celina	62	12		1-15	Oil City				
Shaw	t Maginnis	64	4	36. I		Locktown				4-11						rarkers Landing			29-2	
Idon P.O. 50	t Shaw	60			0.48	Moorestown f	63	10		2.69	Cleveland	57	14	34-7	1.69	Pottstown	58	11	35.0	1
Spring S	ldon P.O.t	50	-I2	27.6		New Brunswick (2)	56		34-4	3.84	Collinwoodt	58				Reading	58	8	32.5	
leg	rinia City	48	- 9		0.03	New Brunswick (3)			33-8										27.8	1000
ghton 64 4 25.1 Paterson 55 7 35.1 Gold 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ley			27.8		Ocean City	50	12	36.2	4.70	Elyria	59	16	34-4	1.69	Scranton	55	4	35-8	18
Principle Prin			-			Paterson					Fostoria			32. I		Smethport	56		34-7	1
Solor	bertson *	70	- 2	33-9		Plainfield	58	7		4.82	Garrettsville	56				Somerset			27.1 32.0	1
Scity	Soto *	63			1.72	Keadington T		10	38.2	*****	Georgetown	60	12	35.0	1.38	Swarthmore	58		33-7	L
1 Niobrara 5 4 - 4 21.3 0.16 Tenally 5 2 6 6 33-3 4.56 Harm 5 5 4 6 31.6 1.62 Warren 1 70m's River 5 1 10 34.4 2.75 Harm 5 5 4 6 31.6 1.62 Warren 1 70m's River 5 1 10 34.6 2.75 Harm 5 5 4 6 31.6 1.62 Warren 1 70m's River 5 1 10 34.6 2.75 Harm 5 5 4 6 31.6 1.62 Warren 1 70m's River 5 1 10 34.6 2.75 Harm 5 5 5 4 6 31.6 1.62 Warren 1 70m's River 5 1 10 34.6 2.75 Harm 5 5 5 4 6 31.6 1.62 Warren 1 70m's River 5 1 10 34.6 2.75 Harm 5 5 1 35.4 0.55 Warren 1 70m's River 5 1 10 39.0 4.13 Hardon 1 30.4 0.55 Harm 5 3 1.59 Jacksonborough 5 2 14 33.4 0.55 Warren 1 70m's River 5 1 1.77 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.77 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.77 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.77 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.75 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.75 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.75 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.75 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.75 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 5 1 1.75 Kenton 6 1 10 33.8 1.54 Warren 1 70m's River 6 1 10 10 10 10 10 10 10 10 10 10 10 10 1	ls City	62	2			South Orange					Greenville	55				Troy t	55		31.9	
## ## ## ## ## ## ## ## ## ## ## ## ##	t Niobrara	54		21.3	0.16	Tenafly	62		32.3	4.89	Hanging Rock	61		33-4	0.81	Uniontown	62		35-5	
michi	t Sidney	65	- 6	31.3		Trenton	66	IO			Hudson				1.54	Wellsborough	58	- 4	29.8	1
Seprings	nklin			*****		Union	53			3.59	Jacksonborough	52		33-4		West Chester	56	9	34.2	1
coln 66 5 33.4 0.46 Deming* 65 30 46.7 0.27 Mansfield 55 0 33.0 1.47 Rhode ledand. requeste * 65, 7 0.1 Fort Bayard* 74 25 45.3 1.02 Mansfield 1.91 Fort Soldon 66 22 44.4 1.45 Marietta (2) 2.15 Marie	108 801	66		29-7	0.25	New Mexico.					Kenton				1.67	Wysox	56	6	30.0	1 :
General Color Gallings Spring Gallings Spring Spring Spring Gallings Spring Spring Spring Spring Spring Spring Gallings Spring S	oln	66				Deming t	65				Lordstown	55		33.8		Rhode Island.	00		33-9	1
raska City 62	quette * 1	05	7	*****	10.0	Fort Seldon	74	25	45-3	1.02	Mansfield	61	12			Bristol	54		33.8	
dale	raska City	62	I	29.9	0.62	Fort Union	60	6	32.8	0.30	Marietta (2)				2.15	Kingston			*****	1
Willow Springer	dale	64				Gallinas Spring	53								1.45	Newport	52	8	34-9	
Springer	mer	64	4	28.9	0.60	Las Vegas	59		28.0	0.45	New Alexandria	57		32.8	1.58	Olneyville	68	8	34.9 36.6	10
Sumsef 64	Willow		*****			Springer					New Comerstown	52	7	31.5	1.65	Providence (1)	50	8	34-6	1
miseh	ent	55	-8		1.35	New York.	521	-4	27.8	2.41	North Lewisburgh.	56		33-4		Woonsocket	59 58		32.8	
it Hill			- 5	33.8	0.50	Ardenia†	54	8	33.6	5-45	O. S. University	58		33-0	1.36	South Carolina.			-	r
te Point 60 2 37.2 0.60 Boyd's Corners*1. 55 7 32.0 6.13 Quaker City 58 3 34.5 2.66 Cedar Springs 70 13 Canton f 48 -18 25.0 2.40 Ruggles*† 50 15 32.9 1.55 Cheraw 69 22 Cheraw 69 23 Cheraw 69 24 Ch	t Hill	66				Barnes' Corners	45			3-94	Portsmouth	62	14	36.4	1.05	Branchville	67		46-4	B
	t Point	60	2	37.2	0.60	Boyd's Corners*†	55	7						34.5		Cedar Springs		13	38-5	
Second S	le Mountain t			33.8		Constableville			23.1	5-47	Sidney (1)	57		34-4	1.77	Clinton	65	23	42.6	Е
1	rawef	54		33.6		David's Island	54		27.6 37.3 m	3.30	Springborough		******			Evergreen	62		41.0	
e's Ranch	ner's Ranch		*****		6.00	Edent	54	2	32-1	5-73	Titlen t	879			1.37	Florence	68		39.0	
Dorado						Fort Columbus	55	9			Wapakoneta	58	10	33-2	2.16	Kirkwood t	59		38.8	
of 60 -2 31.6 1.00 Fort Wadsworth 54 8 34.2 3.10 Westerville 56 10 32.3 1.34 Timmonsville 66 35 b McDermitt 59 4 35.6 1.20 Mesterville 59 12 36.6 2.50 Weymouth 1.43 Winnsborough 66 17 oba . <td>ton</td> <td>60</td> <td>18</td> <td>53.62</td> <td></td> <td>Fort Niagara</td> <td>53</td> <td>9</td> <td>35.5</td> <td>2.62</td> <td>Wauseon Waynesville</td> <td>56</td> <td>6</td> <td></td> <td></td> <td>Statesburgh</td> <td>67</td> <td></td> <td>43.7</td> <td>1</td>	ton	60	18	53.62		Fort Niagara	53	9	35.5	2.62	Wauseon Waynesville	56	6			Statesburgh	67		43.7	1
McDermitt 59 4 35.6 1.27 Geneva 54 5 31.2 1.94 Weymouth 1.43 Winnsborough 66 17	1	60	- 2	31.6	I-00	Fort Wadsworth	54	8	34.2	3.10	Westerville	56		32.3	I - 34	Timmonsville	66	35	50-5	L
1.	McDermitt	59				Geneva	SAT	5			Weymouth				1-43	Winnsborough	00		41.0	Ł
leck † 54 — 10 29. 1 0. 15 Ilion † 51 — 6 28. 5 2. 97 Yellow Springs 58 9 33. 6 1. 33 Andersouville 60 19 15 16 17 31 1 0. 34 Johnstown 8 2 30. 2 3. 42 Youngstown 57 4 33. 3 1. 50 Ashwood† 62 19 19 15 16 34. 5 0. 41 Kingston 53 1 29. 44 3. 15 Albany 56 25 44. 0 4. 28 Carthage 69 14 3. 15 Albany 56 25 30 46. 5 1. 20 Charleston 51 — 6 Ashland* 65 30 46. 5 1. 20 Charleston	08	57	24	*****	0.65	Hess Road Sta# f	50		32.6	2.72	Wooster (1)				1.22	Yorkville	68		45.0	١
Springs† 60 17 31.1 0.24 Johnstown	eck +	54	-10	29.1	0.15	Ilion t	51	- 6	28.5	2.97	Yellow Springs	58	9	33.6	1.33	Andersonville	60		36.9	l
nboldt † 56 16 34.5 0.41 Kingston 53 1 29.41 3.15 Albany 55 25 44.0 4.28 Carthage						Johnstown					Oregon.	57	4	33-3		Austin	69	14	41.1	ı
Cityf	nboldt †	56	16	34-5	0-41	Kingston	53	I	29-41	3-15	Albany			44.0		Carthage			*****	P
stellot so mto 20.2 0.00 Madison Barracks so mt or s 2 or East Portlands se 38 4.22 Clinton	Cityt			26.3	0.85	Lowville	49	-10	27.0	0.95	Bandone t	63	32		6.29	Clarksville	63	17	39-4	
neitor 50 - 10 30-2 0-00 ministribus 5 - 14 27.1 2-97 East roriand 55 25 25 27 43 27 1 27 1 27 1 27 1 27 1 27 1 27 1 27	itellof	50	-10	30-2	0.00	Madison Barracks	52	-14 -10	27.1	2.97	East Portland*	55			4.23	Clinton		*****		

Metagralamianl	record of	voluntary observers.	Ac -Continue	d
AM ELEUT OLOGICOL	recuru or	DOLLINGER OUNCY DUYS.	arc. — Continue	250 to 1

Stations.		mperi		d	Stations.		mpera ahrenh		p'n.
Compount	Max.	Min.	Mean	Precip		Max.	Min.	Mean	Precip
Fennesse-Cont'd.	1 .	1 .	1 .	Fax.	Teres-Cont'd.				Fee.
Fayetteville	60	18	42-0	9 50	Huntsville	74	30	53-2	6.4
Florence Station	63	24	40-7	1-50	La Grange	24		30	5-79
Fostoria		9	40-5	1-55	Lampasas		27	51.7	2.4
Franklin	70	17	40-2	1-35	Longview		26	50-2	7.00
Greeneville	50	18	36-8	T-88	Luling		30	54-1	3-9
Griof	62	14	38-6	I.QI	Mesquite	73	26	49-0	4-27
Hohenwald	66	10	37-9	1.44	Mexia New Braunfelst	70	29	51-4	15.6
ohnsonville				0.95	New Braunfelst	71	32	51-4	3.9
Jonesborough	55	16	38-1	1-41	New Ulm	75	34	54.8	4-5
Kingston Springs		15	39-2	1-89	San Antonio		34	55-4	2.4
Kingston		*****			Silver Falls		25	46-6	0.80
Lawrenceburgh		10	37-6	2-93	Tyler	72	27	50.5	5-9
Leeville	67	13	41-1	1-43	Victoria f	75	39	******	4-2
Lewisburgh	64	15	38-1	2-18	Waco	74	32	53-4	3.25
Lookout Mountain		20	39-2	1.88	Utah.				- 0
Loudon	*****	*****	*****	1-75	Blue Creekt	47	8	31.7	0.8
McKenzie		20	42-8	0.60	Corinne f	31	4	31.8	1.6
Milan		17	39-8	1-15	Ogdent	30	- 3	30-8	I.IC
Parkavilla		20	42-3	1-15	Promontory †	40	4	- 36-7	3-80
Riddleton		14	38.6	1.66	a romoneory :	40		- 90.7	00001
Rockwood			30.0	2.20	Vermont.				1.4
Rogersville		16	37-7	1-45	Burlington	52	- 7	27-3	1.6
ipringdale		35	30-3	1.70	Brattleborough (1).		1	38.9	3-31
avannah		18	43-0	1.58	Brattleborough (2).		4	29.3	
Strawberry Plains		*****	40	2-02	Cornwall	34		-2.3	3-55
Frenton		17	39-3	2-15	Coventryf	50	- 4	24-2	4.30
Watkins		17	38-0	1.47	Chelsea	48	-10	24-7	2.92
Waynesborough	62	10	39-7	1.18	East Berkshire	53	-19	23.6	3.05
Tomas.					Jacksonville		- 4	36-7	3.90
Auntin	73	34	54.0	4-29	Lunenburgh	58	-10	28-1	3-07
Belton	74	28	40-9	3-48	Manchester f	54	-4	28-3	4.61
drady	73	25	47-9	2.84	Middlebury	50	- 6	26-0	4-90
Brasoria		33	54-9	5-34	Saint Johnsbury	50	-10	34-2	1.90
Brenham	74	36	55-9	6-41	Strafford*†	50	-10	25-6	3-50
Brownwood		*****	49-2	2.20	Vernon	52	0	29.7	3.01
mp Pena Colorado		18	42.6	0-36	Virginia.		1		
Cedar Hill f		27	52.8	4-00	Abingdon Bird's Nest*†	ener.	*****		2-70
Neburne	70	30	49-6	2-90 6-00	Christiansburgh	58	17	38.9	2. 15 1. 43
Columbia Station	70	31	57-5	2.74	Dale Enterprise *	68	13	40.8	1.83
Jorsicana(1)		29	52-2	5-82	Fort Monroe	61	19	39-8	2-97
Jorsicana(z)		ay.	Su. u	4-45	Fort Myerg	60	14	38.0	0.34
Decatur		25	47-9	3-74	Marion		10	33-1	2.39
Sdinburgh			46-3	0.40	Petersburgh		10	37-4	2.73
Fort Clark	26	10	47-0	1-00	Spottsville*	68	16	38-7	2-50
Port Conche	25	39	50-1	0.40	Summit*		10	34.5	
Fort Davis	66	20	46-7	0-21	Smithfield 7	67	18	40.2	2.60
ort Elliott		18	42-8	0-71	Smithfield 7 University of Va		*****		3-54
Fort McIntonh		30	56-58	0.45	Wytheville	55	16	35-I	2-30
ort Bliss	72	27	45-5	0-00	Washington Territory	-			
Fort Ringgold	87	30	60-5	0-56	Blakeley?	56	23	43.0	6.12
ort Worth		39	49-2	4-90	Fort Spokane	46	13	32.6	3-14
dallinno	76	26	52.74		Fort Walla Walla		19	36.1	1-42
Branbury f		25	50-3	3-41	Tacoma	56	26	43-5	4.97
Houston f	78	33	53-1	4-57	Vancouver B'ks	57	20	42-0	3-35

Meteorological record of voluntary observers, &c .- Continued.

Stations.		mpera		di,	Stations.		mpera		,b.
	Max.	Min.	Mean	Precip'n.		Max.	Min.	Mean	Precip'n.
West Virginia.				Ins.	Wisconsin-Cont'd.	0	0		Ins.
Buckhannon					Fredonia * 1 i	50	5	27-1	1.75
Charleston		*****		1.07	Lincoln	*****		30.0	0.46
Glenville	****	*****	*****	1.62	Madison	51	II	28-4	1.57
Helvetia* Middlebrook †	58	2	32-5	3-05	Manitowoc	54	- 8	31.5	2-14
Middlebrook 7	51	4	26-0	****	Oshkosh	52	5	27.2	1.68
Morgantown	****	*****	*****	1.92	Philips				1.65
Rowlesburgh		*****	*****	1.10	Portage				1.63
Tyler Creek	60	14	35.6	5-227	Rhinelander		*****		1.33
Weston		*****	*****	1.99	Waucousta	42	2	*****	1-15
Wheeling		*****		2.59	Weston †	48	2	23.7	3-30
White Sulph. Sp'gs. West Indies.	****	*****	*****	1.83	Wyoming.				
Hamilton, Bermuda	72	52	64-5	7-93	Carter				0.40
Wisconsin.					Camp Pilot Butte	40	-27	19.6	0-23
Cadis †	46	10	26.8	4-89?	Camp Sheridan	46	-13	22.5	
Chippewa Falls	*****			1.64	Fort Bridger	66	26	20.6	0.76
Delevan		7	28.6	2-56	Fort D. A. Russell.		- 3		
Fond du Lac	50	3	37-3	1.93	Sweetwater Bridge.	****	*****		0-00

Reports received too late for publication in the November Weather Review.

Alaska.	0	0	0	Ins.	Mexico.	0	0	0	Ins.
Killisneo	47	18	36.1	8-35	Magatian		68	77.2	3-76
Arisona.	-			-	Mexico	74	40	57.6	0.62
Ash Canyon			*****	4-50	Guanajuato	78	40	60.6	0.36
Mt. Huachuca					Missouri.			1	- 0
California.				-	Pierce City	83	26	42-4	4-20
Auburnf	74	3.5	52-9	4-30	Nebraska,	-	1	1	4.00
Anderson	77	31	55-5	6.08	Tecumseh	74	13	40-6	0-35
Barstow	73	38	54-6	1-00	Nevada.		1	1	- 00
Caliente †	74	40	56-5	1.33	Wadsworth j	59	15	38-2	
Calistoga †		20	54-7	6-14	Winnemucca †	77	32	51.1	0.00
Corning t	70	44	57-5	3-34	New York.		-	-	-
Marysville †	70	37	52-7	4-23	Le Roy	76	10	40.3	2.62
Monterey †	71	31	57-3	1.76	Pennsylvania.		1		1
Pleasanton†	66	33	51-3	5-15	Drifton	73	11	39-9	4.84
Redding †	62	33	48-5		West Indies.		1	02.2	4 -4
Shingle Springs †		43	50-0	4-45	Grand Turk Isl'd				1-42
Traver †				2.33	Hamilton, Ber	76	60	70-9	6. 38
Vacaville †	75	48	62.8	5-77	West Virginia.				-
Colorado.	100		-		Rockport	77	23	44-0	4-19
Fort Lyon	77	7	37.8	0-14	Wisconsin.		-0	-	
Illinois.			94	-	Oshkosh	64	8	33-5	1.80
South Evanston	26	3.5		3.83	New Jersey.	-		00.0	
Indian Territory.					Vineland	72	91	47-6	3-51
Caddo Creek	82	20	52.2		South America.	,-	-	40	0.0
Jimtown		38		****	Surinam, D. G	92	72	80-3	6.32
Kansas.			20.00		Utah.	-			- 0-
Independence	86	23	43-I	2.32	Corinne †	58	24	39-7	0.65
Santa Fé				0.00		-	1	03.1	-3
Topoka		12	35-6	2-01					

†Maximum and minimum from observed readings. The letters of the alphabet denote number of days missing in record.

SUPPLEMENTARY DATA OF EXCESSIVE RAINFALLS, JANUARY TO NOVEMBER, INCLUSIVE.

	Month	ly ra	infall q	f 10 inches or more.			
State or Territory and station.	Month.	Year.	Amt.	State or Territory and station.	Month.	Year.	Amt.
Alabama.			Jaches.	Alabama-Cont'd.			Inches.
Auburn	Feb	1881	11-31	Clintonville	Jan	1885	12-32
Do	Mar	188a	19-07	Do	June .		15-65
Do	April .	1883	12.80	Decatur	Jan	1882	13-70
	June .	1864	11-50	Do	Mar		13.85
Do	July	1887	31-00	Evergreen	April .	1886	10-30
Do	Nov		10.92	Do	June .		12-11
Bermuda	Mar	1886	12.00	Do		1886	11-09
Birmingham	Mar	1896	11-51	Fish River	Aug	1867	13-55
Do	April .	1864	11.32	Gadsden	June .	1886	10.87
Do	June .	1862	14-41	Greensborough	Jan	1886	10-15
Bolling		1864	12-96	Do		1862	11-10
Carlowville		1860	10.82	Do		1865	13-09
Do		1872	12-14	Do			11.72
Do	.do		11-39	Do			11.61
Do	Mar	1871	13.00	Do			13-18
Do		1872	11-42	Do(x)		1856	12-99
Do		1875	20.50	Do(2)		1856	14-20
Do		1876	10-95	Green Springs			11-04
. Do		1868	10-40	Do		1863	10-47
Danson		1869	10-05	Do		188c	10-76
190		1874	11.17	Do		1881	10-00
Do	.do	1876	12.52	Do		1871	13.30
Do		1877	15-10	Do		1874	14-59
Do	May		10-35	Do		1876	10.25
Do	July	1872	18-55	Do		1880	10-15
Do		1850	11-45	Do		1884	12-02
Do		1875	18-65	Do		1861	11-00
Do		1850	15.60	Greenville	April .	1883	11-34
Oarrollton	Mar	1996	11.60	Do	July	1887	10.53
Owntro		1886	13-90	Grove Hill	Mar	1886	11-00
Clanton		1884	12-75	Havana (near)	Jan	1868	11-22
Des		1964	12.04	Do		1860	20. 20

Monthly rainfall of 10 inches or more-Continued.

State or Territory and station.	Month.	Year.	Amt.	State or Territory and station.	Month.	Year.	Amt.
Alabama-Cont'd.			Inches.	Alabama—Cont'd.			Inches.
Huntaville	Jan	1834	10-41	Mount Vernon A's'ni .	.do	1874	12-95
Do	Feb	1833	11-45	Do			12-45
Do	Mar		10-80	Do	.do	1884	14.68
Do	do	1875	10-46	Do	April .	1846	11.51
Do	April.	1835	12-30	Do			12-95
Do			17-39	Do			11-18
Do			10-50	Do		1843	16.67
Do			10-26	Do		1874	13-05
Do	do	1874	10-15	Do		1883	14-24
Jacksonville	Mar		12.05	Do		1847	11.92
Lineville	do	1886	12.30	Do		1849	14- 96
Do		1886	12.41	Do		1853°	12-64
Marion		1886	11-00	Do	.do ,	1882	14-54
Do		1886	11.19	Do	Aug	1849	11-15
Do			13-25	Do	.do		12.59
Mobile		1841	14-90	De		1882	11.26
Do		1873	11-47	Do		1853*	11.09
Do		1842	12-71	Do		1855	10-03
Montgomery			10.50	2 Do		1845	11.87
Do		1859	11.80	Do		1849	13.00
Mount Vernon A'a'nl		1841	12-84	Do		1844	10.57
Do		1845	11.30	Do		1849	10-54
Do		1853*	11-18	Do		1855	10.78
Do		1854	II-OI	Do		1856	11.25
Do		1858	10-62	Do	.do	1857	10.05
Do	do	1883	10.30	Mount Willing	Jan	1885	13.05
Do		1854	12.83	Newton		1886	18.05
Do		1860	10-80	Do		1886	10-70
Do		1874	12.75	Do		1886	10.35
Do			10.81	Opelika (near)		1883	10.65
Do		1853	16-55	Do		1884	10.15
Do	OD	1859	10-82	Do	OD.	1886	10-73

December Process Pro	Mont	hly rai	nfall	of 10 i	nches or more—Cont	inued.			Mont	hly rain	afall	of 10 in	nches or more—Cont	inued.		,
Pincapped		Month.	Year.	Amt.	State or Territory and station.	Month.	Year.	Amt.		Month.	Year.	Amt.		Month	Year.	Amt.
Pincapped	Alahama Cont'd		1	Inches.	California_Cont'd			Inches.	Celifornia—Cont'd.			Inches.	Connecticut-Cont'd.			Inches
Section Sect	Pine Apple			12.30	Auburn			10-10	Fort Gaston				Columbia	Jan		11.5
Dec. April 1971 1972	Russellville				Do											12.4
Dec. April 1971 11.05 10.05	Do	do	1874	10-62	Do	NOV	1875	11 39	Do	do	1874	15-40	Do	Aug	1872	12-0
Dec. 1962 1965 1965 1966 1967 1965					Boca.	Feb.			Do	reb						13.7
generale de la color de la col	Do	do			Do	Mar		10.20	Do	do			Groton	do	1867	10.7
Dec.	Springfield	Mar			Cahto	Jan			Do	do						10.8
Dec.	Do				Do	Feb							Do	Aug	1867	10.2
Trendenten Mar. 1 181 172 Do	Do	April .	1874	13.70	Do	Mar			Do	do			Do			10.4
Dec.	Tracaloosa	Mar.			Do.	Jan							Do			14-5
Union Springers	Do	do	1886	11.31	Do	Feb	1878	16.46	_ Do	do	1874	13.99	New Haven	July	1828	II.I
Do.	Do	July			Do											10.5
December Color C	Do	do	1875	12-35	Do	April .	1880		Do	Feb	1859	10-10	Do	Aug	1856	12.5
December 1.5	Do	April		10.52	Chico	Jan			Fort Miller	Mar			Saybrook'	do		10.8
Decoration April 180 15-78 10-10 1	Do	June .			Cisco	Jan			Fort Point	Jan			Voluntown	Feb	1886	11-2
Dec. Mar. 1868 18-55 Dob. dob. 1865 18-55 Dob. do	Do	July	1887	15-77	Do	do			Fort Ter Waw	do		12.26	Wallingford	Mar		10.9
Wewchard	Valley Head	June			Do	do							Do			11.6
Camp Cististedem. July 2 598 11-72	Wewokaville				Do	Feb		13.46	Do:	do	1860	10.07	Do	do	1867	10.5
Camp Goodwin		Inly	+968	11.99	Do	do	1872						Do			11.9
Camp Lincoln . Jah	Camp Goodwin	Sept			Do	do	1870	12-20	Knoxville	Mar	1864	11-72	Waterbury			12.3
Pert Bursham Jan. 1976 12-74 Do	Camp Lincoln	Jan	1869	17-05	Do	do			Los Angeles	Jan				May	1868	IX-I
Decomposition Decompositio	Fort Buchanan				Do	do		12-01	Meadow Vailey	Jan			Fort Wadsworth	June .	1967	13.8
Dec. May 1976 10-22	Arkansas				Do	do	1884	12-00	Do	do	1866	17-35	Kimball	Aug	1887	10-1
Payes Paye	Durham	Jan			Do	Mar.			Do	Nov			Yankton	June		10-0
Part Marian Mary 1886 10-90 Do	Fayetteville	July	1872		Do	do	1876		Do	do	1865	22-40	Delaware.			
Deb.	Fort Madison	May			Do	do							Milford			10.0
Dec. May 1856 12-17 Do. April 1850 11-96 Do. May 1854 13-76 Do. April 1850 Do. A	Do	do			Do	do			Do	Feb			Saint George's		1884	12.2
Do. Nov 1841 15-75 Colfact Jan. 1972 10-20 Do. April 1884 11-26 Do. April 1884 D	Do	May	1852	12.17	Do	April .		11-90	Mount Hamilton	do		12.76	District of Columbia.	Ana	1969	10.5
	Do															10-1;
Dec.	Helena	Jan	1879	10-26	Do	do	1874	10.93	Murietta	Jan	1886	10.66	Do	Aug		10-2
Do.	Do	do					1875						Do(2)	Oct		11-10
Do. Mar 1974 11-56 Do. do. 1881 15-59 Do. do. 1881 15-59 Do. do. 1871 Do. do. 1872 Do. do. 1872 Do. do. 1873 Do.	Do				Do	do			Do	Feb			Do(3)	Aug	1867	11.2
Do.	Do			11.56	Do	do							Placida (3)	Oct	1800	10.6
Do. April 1874 1575 Do. .do 1875 11.1 Do. .do 1877 15.0 Do. .do 1877 15.0 Do. .do 1875 11.1 Do. .do 1877 11.1 Do. .do 18	Do	do		11-75	Do	Feb			Newhall	Feb				June .	1886	11-40
Do.	Do	April .	1874	13-75	Do	do	1873	11.12	Do	do		12.38	Do			10.90
Do. May 1882 11-76 Do. .do 1876 14-52 Do. .do 1876 14-52 Do. .do 1876 14-52 Do. .do 1884 13-75 Do. .do 1884 13-85 Do. .do	Do	do		15.01									Archer			11.45
Renest	Do	May	1882		Do	do	1876	14-39	Do	Feb	1878	10.26	Do	July	1886	14-45
Lead Hill. Feb 1884 10-33 Do	Do								Petaluma	Feb			Do			14.80
Do. May 1882 10.56 Do. do. 1884 10.04 Red Blint Jan 1885 10.14 Do. (1) do. (1) do. 1974 1584 11.14 Do. (2) do. 1974 1587 10.14 Do. (3) do. 1974 1587 10.14 Do. (4) do. 1874 1587 10.14 Do. do. 1875 17.25 Do. do. 1	Lead Hill				Do	April .			Do	do	1887	10.43	Do(1)	July	1874	12.6
Little Rock May 1867 10-90 Do. Nov 1874 13,85 Redding Jan 1876 11-28 Do. Och 1870 14-28 Do. do. 1875 14-84 Do. do. 1876 11-28 Do. Och 1870 14-28 Do. do. 1875 14-84 Do. do. 1876 11-28 Do. Och 1871 14-92 Do. do. 1870 14-29 Do. do. 1881 13-28 Do. Mar 1876 11-20 Do. do. 1861 13-28 Do. do. 1881 13-28 Do. do. 1882 13-28 Do. do. 1882 13-28 Do. do. 1882 13-28 Do. do. 1882 13-28 Do. do. 1884 13-28 Do. do. 1885 13-28 Do. do. 1884 13-28 Do. do. 1885 13-28 Do. do. 1884 13-28 Do. do. 1885 13-29 D	Do			10.56	Do	do							Do(2)			15.6
Malvers Junetion do 1892 17-36	Little Rock				Do	Nov			Redding				Do	Oct		14-50
Do. April 1877 1-95 Crescent City Jan. 1856 18-58 Do. .do .1856 18-58 Do. .do .1857 13-78 Do. .do .1853 11-80 Do. .do .1851 11-80 Do. .do .1852 13-45 Do. .do .1854 10-55 Do. .do .1854 10-55 Do. .do .1854 10-55 Do. .do .1854 13-55 Do. .do .1856	Malvern Junction	do	1882	17-36	Do	do	1875	14-84								11.50
Do. June 1877 14-95 Crescent City Jan 1885 18-26 Do. Feb 1875 13-76 Do. .do .8633 11-80 Do. .do .8657 13-76 Do. .do .8633 11-80 Do. .do .8657 13-76 Do. .do .8659 13-76 Do. .do .8599 10-5 Do. .do .8599 13-76 Do. .do	Do															15.37
Do	Do	June .	1877	14-95	Crescent City	Jan	1886	18-28	Do	Feb		13.78				11.44
Do. May 1881 10-15 Do. Feb 1867 11-20 Do. Mar 1850 10-00 Do. Aug 1840 15-00 Do. do. 1882 10-35 Do. do. do. 1883 10-35 Do. do. do. 1883 10-35 Do. do. do. 1884 10-35 Do. do. do. 1884 10-35 Do. do. do. 1884 10-35 Do.		Feb			Camp Lincoln	do			Sacramento				Do	do		10.60
Do. do 1884 10. 55 Do. do 1864 10. 55 Do. do 1864 10. 55 Do. do 1864 10. 55 Do. do 1865 13. 50 Do. do	Do	May			Do	Feb	1867	11.29	Do	Mar	1850	10.00	Do	Aug	1840	15.0
Do.							-0.0				-OD -		Do	do	-33	10. 50
Newport April 1886 21-20 Camp Wright Jan 1856 15-8 San Francisco Jan 1802 24-35 Do do 1859 13-57 Springfield Feb 1884 10-15 Do do 1872 11-25 Do do 1872 1									San Francisco (Pres.)	Feb			Do	do	1858	10.3
Springfeld Feb	Newport	April .	1886	21.20	Camp Wright			15.83				24-36	Do	Gent.		13-13
Texafkana	Prescott	Feb											Do	do		10.50
Do	Texarkana	April .	1884	10.96	Do	do	1874		San Rafael	do	1886	11.08	Daytona	Oct	1876	15.87
Walnut Ridge	Union County	do			Do				Santa Crus	do						21.35
Washington Jan 1850 10-90 Delta Feb 1849 10-27 Do Go Feb 1849 14-50 Do April 1886 10-10 Do April 1886 13-60 Do May 1854 13-60 Do May 1854 15-60 Do May 1854 Do May 1854 15-60 Do	Walnut Ridge	May			Do	Nov			Do	do	1878	10.00	Do	Sept	1870	II-O
Do.	Washington	Jan			Delta	Feb					1879		Fort Barrancas	Feb.		10-40
Do. April 1840 13-50 Dunnigan Jan 1878 10-50 Do. do 1873 16-20 Do. do 1875 15-50 Do. do 1875 15-72 Do. do 1884 12-70 Do. do 1875 15-72 Do. do 1887 15-72 Do. do 1887 15-72 Do. do 1887 15-72 Do. do 1887 15-72 Do. do 1875 15-72 Do. d					Downieville	Nov			Do	Feb	1872		Do	do		10-16
Do. July 1849 19-50 Do. .do 1876 14-50 Do. .do 1876 15-72 Do. .do 1887 20-70 Do. .June 1843 13-50 Do. .do 1877 14-90 Do. .do 1880 Do. .do 1880 Do. .do	Do	April .	1840	13.60	Dunnigan	Jan	1878	10.50	Do	do	1873					10.9
Do. do 1852 15.70 Do. do 1879 15.72 Do. do 1887 20.70 Do. June 1843 17.80 Do. do 1880 Do. do 1880 Do. do 1881 17.30 Do. do 1881 17.30 Do. do 1882 17.80 Do. do 1882 17.80 Do. do 1882 17.30 Do. do 1873 17.30 Do. do 1874 17.40 Do. do 1884 17.40 Do.					Do	do			Do	do	1884					13.50
Do. do 1857 14-90 Do. do 1880 10-16 Do. do 1885 19-16 Do. do 1885 18-18 Do. do 1872 11-25 Do. do 1872 12-25 Do. do 1873 18-25 Do. do 1873 18-25 Do. do 1874 12-25 Do. do 1875 18-25 Do. do 1875 18-25 Do. do 1875 18-25 Do. do 1876 18-25 Do. do 1872 13-25 Do. do 1882 13-25 Do. do 1883 13-25 Do. do 1883 13-25 Do. do 1883 13-25 Do. do 1883	Do	do			Do	do	1878		Do	do	1887	20.70	Do	June .	1843	13-0
Do. Nov 1843 11.30 Do. .do .1881 25.69 Do. .do .1884 10.53 Do. .do .1884 10.53 Alcatrax Island Jan .1862 14.40 Do. .do .1886 18.28 Do. .do .1886 18.28 Do. .do .1874 12.56 Do. .do .1873 18.55 Do. .do .1874 12.66 Do. .do .1873 18.55 Do. .do .1873 18.55 Do. .do .1873 18.55 Do. .do .1874 12.50 Do. .do .1873 18.55 Do. .do .1874 12.50 Do. .do .1874 12.51 Do. .do .1881 13.51 Do. .do .1882 13.51 Do. .do .1882 13.51 Do. .do .1883 10.50 Do. .do .1884 13.51 Do. .do .1885 13.51 Do. .do .1885					Do	do			Do	Mar						12.80
California Aleatrax Island Jan 1862 14-40 Do do 1882 15-03 Do do 1883 15-04 Do do 1884 12-25 Do do 1884 12-25 Do do 1884 12-25 Do do 1873 18-50 Do do 1874 12-66 Do do 1873 18-50 Do do 1875 13-17 Do do 1874 10-42 Do do 1875 13-17 Do do 1875 13-17 Do do 1876 16-87 Do do 1877 10-90 Do do 1879 12-80 Do do 1879 13-80 Do do 1879 13-80 Do do 1879 13-80 Do do 1884 10-20 Do do 1881 20-00 Do do 1884 10-20 Do do 1872 13-85 Do do 1879 13-85 Do do 1879 13-85 Do do 1879 13-85 Do do 1887 18-80 Do do 1879 13-85 Do do 1887 18-80 Do do 1878 13-80 Do do 1879 13-85 Do do 1889 13-80 Do do 1879 13-10 Do do 1881 11-80 Do do 1882 11-80 Do do 1884 11-80 Do do 1884 11-80 Do do 1884 11-80 Do do 1842 13-80 Do do 1843 13-80 Do do 1844					Do	do			Do	do			Do	do		14-4
Alta do 1872 11.25 Do Feb 1872 14.58 Do Mar 1874 12.66 Do do 1873 18.50 Do Mar 1884 10.50 Do do 1874 10.42 Do do 1875 13.17 Do do 1876 16.87 Do do 1876 16.87 Do do 1876 16.87 Do do 1878 10.42 Do do 1878 10.42 Do do 1879 13.21 Do do 1884 10.50 Do do 1872 13.85 Do do 1884 10.50 Do do 1878 13.85 Do do 1887 18.80 Do do 1884 11.50 Do do 1879 13.85 Do do 1887 18.80 Do do 1879 13.10 Do do 1879 13.85 Do do 1887 18.80 Do do 1879 13.10 Do do 1879 13.85 Do do 1882 13.50 Do do 1879 13.10 Do do 1879 13.10 Do do 1881 11.80 Do do 1882 10.50 Do do 1882 12.50 Do do 1884 12.50 Do do 1885 12.50 Do do 1885 13	California.				Do	ob		10.03	Do	April .		30-40	Do	do		18.6
Do. do 1874 12.66 Do. do 1873 18.50 Do. do 1874 10.45 Do. do 1875 13.17 Do. do 1874 10.45 Do. do 1876 16.57 Do. do 1879 12.80 Do. do 1881 10.20 Do. do 1882 13.51 Do. do 1882 13.51 Do. do 1872 13.75 Do. do 1882 18.80 Do. do 1872 13.75 Do. do 1872 13.75 Do. do 1872 13.85 Do. do 1873 10.00 Do. do 1882 15.85 Do. do 1842 13.85 Do. do 1842 13.85 Do. do 1842 13.85 Do. do 1842 13.85 Do. do 1844 13.85 Do. do 1845	licatraz Island	Jan			Do	Feb			Tehama	Jan			Do	.do		16.2
Do. do 1877 10-00 Do. do 1876 16.87 Do. do 1879 13-21 Do. do 1881 20-00 Do. do 1881 20-00 Do. do 1884 11-20 Do. do 1872 13-23 Do. do 1873 10-20 Do. do 1872 13-35 Do. do 1873 10-20 Do. do 1873 10-00 Do. do 1874 11-80 Do. do 1875 11-80 Do. do 1873 10-00 Do. do 1873 10-00 Do. do 1882 16-60 Do. Mar 1882 12-05 Do. do 1884 11-10 Do. do 1881 11-80 Do. do 1884 11-10 Do. do 1884	Do	do			Do	do	1873	18-50	Tennant	Feb	1878	10.75	Do	ob	1855	16.14
Do. do 1879 12.80 Do. do 1884 10.20 Do. do 1884 10.20 Do. do 1884 10.20 Do. do 1884 10.20 Do. do 1872 13.85 Do. do 1873 13.85 Do. do 1874 22.12 Do. do 1884 11.30 Do. do 1873 13.85 Do. do 1873 13.85 Do. do 1874 22.12 Do. do 1884 11.30 Do. do 1873 13.85 Do. do 1883 13.85 Do. do 1884 13.85 Do. do 1885 13.85 Do. do 1886	Do	do											Do	do		13.0
Do. do 1881 20-00 Do. do 1884 10-20 Truckee do 1872 10-49 Fort Brooke June 1848 10-20 Do. do 1873 10-40 Example			1879		Do	do	1879		Towles	Feb	1887	11.60	Do	Nov	1844	11-5
Do. do 1872 13.85 Do. Mar 1874 22.12 Do. do 1884 11.20 Do. do 1873 10.00 Do. do 1879 21.65 Do. do 1887 13.25 Do. July 1840 24.00 Do. do 1881 13.25 Do. do 1841 10.00 Do. do 1881 11.80 Do. do 1883 10.06 Do. Mar 1882 12.05 Do. do 1841 10.00 do 1881 11.80 Do. do 1884 15.18 Do. do 1884 15.18 Do. do 1884 15.18 Do. do 1884 15.18 Do. do 1842 11.00 do 1842 11.00 do 1843 11.00 do 1844 11.00 do 1845	Do	do	1881	20-00	Do	do	1884	10.20	Truckee	do	1872		Fort Brooke	June .		13.20
Do. do 1873 10.00 Do. do 1879 21.69 Do. do 1882 12.35 Do. July 1840 24.				13.75									Do	do		10.7
Do. do 1878 14.80 Do. do 1882 16.60 Do. Mar 1882 12.05 Do. do 1841 10.	Do	.do	1873	10.00	Do	do	1879	21.69	Do	do	1887	12-25	Do	July	1840	24 - 5
Do. do 1881 11.80 Do. do 1884 15.18 Colorado. Do. do 1845 12.80 Do. do 1879 43.30 Do. do 1884 15.80 Do. do 1884 15.80 Do. do 1884 15.80 Do. do 1884 15.80 Do. do 1895 11.90 Do. Nov 1874 12.86 Fairfield Jan 1878 10.91 Trinidad June 1878 12.83 Do. do 1852 10.84 Do. do 1852 10.84 Do. do 1854 15.84 Do. do. 1854 15.84 Do. do. 1854 15.84 Do. do. 1854 Do. d	Do	do							Do	April	1880					11.0
Do. Mar 1878 11.65 Do. April 1880 21.76 Fort Garland July 1872 10.30 Do. do 1848 21.	Do	.do	1881		Do	do	1884	15.18	Colorado.				Do	do	1845	12.3
Do. April 1880 11-60 Do. do 1886 11-90 Trinidad June 1878 12-83 Do. do 1852 10-10 Do. Nov 1874 12-86 Fairfield Jan 1878 10-91 Connecticut. Do. do 1854 15-10 Do. do	Do	Mar		11.65	Do	April .		21.76	Fort Garland	July	1873		Do	do		21.3
Do. Nov 1874 12.86 Fairfield Jan 1878 10.91 Connecticut.			1880						Trinidad	June .	1878		Do	do	1852	10.9
Name 184 185	Do	Nov	1874	12.86	Fairfield	Jan	1878	10.91	Connecticut.				Do	do	1854	15-53
Do	naheim	Feb	1004		Fort Bidwell	Mar							Do	do		13.29
Do	Do	.do	1878		DO	00			Do	Aug			Do	Aug	1840	23-40
Do	Do	Feb	1878	10.19	Fort Gaston	do	1863	13.63	Do	do	1872	10-44	Do	do	1842	12-50

State or Territory	-			Marks on Mountain	4			Otata on Possitana	4	.0		State on Possitone	4		1 .
and station.	Mon	Year	Amt	State or Territory and station.	Mon	Year	Amt	State or Territory and station.	Month	Year	Amt	State or Territory and station,	Month	Year	Amt
Florida-Cont'd.			Inches.	Plorida-Cont'd.			Inches.	Georgia-Cont'd.			Inches.	Georgia-Cont'd.			Inche
Port Brooke	Aug	1848	14-80	Mervitt's Island		1884	11.72	Gainesville Do	Jan Feb	1883	17-00	Thomson	July		10.
Do	.do	1854	11-23	Micanopy	May	1861	11.35	Do		1886	12.80	Do	April .		10.
Do	.do		13-45	DO	July	1858	16.09	Do	do	1888	11-30	Do	Aug	1879	10-
Do		1873	12.75	Do	Aug	1858	10.40	Do Do		1880	11.75	Tybee Island Do	June . July		17.
Do		1845	12.69	Do	Sept	1858	10.38	Do	July	1887	14-75	Walthourville	June .		12.
Do	,do	1852	10.00	Mosquito Inlet (n'r).	Aug	1871	16-97	Do(1)	Aug	1887	16.20	Do	July	1879	RE.
ort Dallas	May	1855	14.69	Do	Sept	1870	11.88	Do(2)	do	1887	13.16	Do	do	1885	11.
Do		1855	11.32	Newport	do	1871	11.85	La Fayette La Grange	Feb	1873 1880	13.15	Way Cross		1882	11.
Do		1846	10-10	Do	June .	1873	13-40	Do	June .	1884	11.75	West Point	July .	1887	12-
ort Deymand	Jan	1856	10:11	Do	do	1874	10.63	Do		1886	10-21	Whitemarsh Island .	may		. 10.
Do	Ang .	1857	10-46	Do	Aug	1872	23.25	Do		1873	11-15	Do	Aug Sept		11.
Do	.do	1857	10-73	Do		1873	12.28	Do	April .	1868	11.30	Illinois.	Sept 11	2000	.3.
ort Jefferson	June .	1867	18-50	New Smyrns	June .	1974	10.71	Marietta McPherson B'ks	Mar	1886	10-41	Aledo		1881	11-
Do	Suly	1867	10.00	Do	Oct	1871	23.00	Do	Feb	1873	12-04	Anna		1876	13.
Do		1865	13-21	Punta Rassa		1874	11-94	Do		1880	13-46	Do		1875	HI.
Do	.do	1867	11-40	Do	July	1876	16-95	Do	April .	1874	10-43	Do	Aug	1879	12.
ort Meade		1854	10.57	Do		1875	12-49	Mosay Creek Do	Jan	1883	13.99	Athens		1844	17.
Do	July	1852	11.71	Do	Sept	1871	12.75	Do		1886	10.00	Do		1851	10.
Do	.do	1886	16.00	Saint Augustine	July	1858	11-43	Do	April .	1880	10.60	Atlanta	do	1882	II.
Do	Aug	1854	10.20	Do		1880	21.50	Do		1884	11.46	Augusta Batavia	Sept	1866	10.
ort Myers	Mar	1886	10.50	Do		1879	11.16	Mount Airy		1882	10-88	-Beardstown	June .	1885	10.
Do	June .	1851	18-51	Do	do	1864	10-02	Do	Feb	1862	12.60	Cairo	May	1882	10-
Do	,do	1852	18.13	Do	Sept	1871	23-90	Naahvilla	Mar	1880	11.30	Canton		1882	10.
Do	.do	1853	35- 58 10- 30	Do	Oct	1879	13.46	Nashville		1880	10-25	Centralia	Feb	1880	11.
	July	1852	12-02	Baint Marks	June .	1874	10.60	Do	Aug	1882	10.48	Dubois	June .	1875	10.
Do	.do	1856	12-45	Do		1876	11.56	Ogeechee Oglethorpe B'ks	Aug	1878	12.05	Do		1866	10.
Do	Aug	1853	10.38	Do	Oct	1879	18.09	Do	July	1843	13-51	Do Elizabethtown	Mar	1866	13.
Do	Sept	1853	22.10	Tallahassee	July	1886	14-30	Do		1850	14.80	Elmira	June .	1869	12.
ort Pierce	June .	1853	29-35	Do	do	1887	12-45	Do	Aug	1850	12.67	Elmore	Sept	1866	10.
	Aug	1853	13.50	Tampa	June .	1873	10-70	Do		1871	12.90	Golconda	Feb	1882	10.
	Oct	1853	17-50	Do		1873	13-45	Oxford		1880	11.00	Do	Aug	1879	II.
ort Shannon	Mar	1843	X1 - 28	Warrington	May	1857	15-21	Do			10.50	Do	do	1882	II.
Do	July	1842	10-55	Do		1856	15-50	Do			11-42	Jerseyville		1873	13.
	Aug June .	1841	11.33	Do		1855	11.13	Do			10-82	Louisville		1872 1860	11.
Do	Aug	1850	11.59	Do		1855	10.56	Perry			11.73	Do	July	1875	15.
Do	Sept	1858	11.69	Do	do	1857	14-30	Quitman	Jan	1881	110-30	Magnolia	May	1867	10.
		1878	11-15	Wellborn		1871	13.63	Do		1883	11-50	Manchester	Jan	1855	13.
omeland	June	1807	13.77	Do	Feb	1875	11-23	Do (near)		1873	13.50	Marengo		1851	15.
				Do				Do	do	1875	10-90	Do	Aug	1850	15-
scknonville		1867	10-49	Albany		1885	14-11	Do		1886	11-35	Mattoon		1872	12.7
Do		1866	18.40	Americus		1996	10.75	Do(1)		1883	11-00	Do	May	1873	18.
Do		1856	10.85	Do	July	1879	11-40	Do	June .	1871	11.72	Do	June .		10.
Do	.do	1867	11.07	Athens	Jan	1883	13-42	Do		1883	10-50	Do	July	1875	10.
Do		1866	10-55	Do	June	1863	10.13	Do		1887	15-99	Monmouth		1881	11.
Do		1850	19.15	Atlanta		1863	13.05	Do		1880	11.60	Mount Sterling	April .	1873	10.
Do	.do	1871	13.70	Do(1)		1873	12.59	Rabun Gap		1882	11-45	Oquawka	Aug	1871	12.
Do		1854	10-40	Do(s)		1873	10.27	Do		1886	11.20	Osceola	April . June .	1861	10.
Do		1867	14-60	Do		1881	10.55	Do		1880	12-27	Pekin		1855	11.
ey West	Jan	1873	11-90	Do	April .		10-42	Do	do	1884	16-20	Do	May	1858	11.
Do	Feb	1872	10-00	Do		1884	11-62	Do		1886	11-90	Do		1865	II-
Do(1)	.do	1853	10.23	Augusta Arsenal	Jan	1874	10.00	Do	June	1884	13.00	Peoria Do	June .	1882	II-
Do	May	1834	EL-46	Bainbridge	April .	1879	11.00	Do	Aug	1879	11.25	Prairie City	do	1882	16.
Do(1)	June .	1853	17.06	Do	Aug	1879	10-50	Do	do	1887	11.70	Prairieville	July	1884	10.6
Do(3)	do	1853	18-11	Berne	June	1878	11.07	Rome		1880	10.40	Ridge Farm	May	1868	10-
Do	.do	1853	15-94	Do	do	1873	10-86	Saint Mary's	May	1887	11-03	Riley	Mar	1870	17-7
Do(1)	July	1857	11.00	Do	July	1873	11-39	Do	June .	1871	15.85	Sandwich	May	1861	10.
Do(a)	.do	1857	18-39	Brunswick	April	1871	13-95	Do	Sent	1877	11.39	Do	Sept	1861	15.
Do		1870	13.00	Do	June .	1884	11-53	Do Savannah	Mar	1843	14-51	Warsaw	May	1858	10.
Do(1)	.do	1874	11.40	Cabaniss	Mar	1874	10-50	Do	May	1840	10-09	Windsor	Aug	1885	II.
Do(1)	sept	1851	12-37	Do	OD	1875	12-10	Do	June .	1838	10.03	Wyanet	Sept	1865	11.
Do(3)	do	1851	10-75	Carrollton	Jan	1883	19-50	Do	July	1848	11.92	York Neck Do	July	1864	10.
Do	.do	1958	10.43	Do	do	1885	10-45	Do	.do	1842	11.08	Windsor	Aug	1885	II.
Do	.do	1800	10-48	Do	Mar	1884	13-25	Do	do	1844	12-98	Windsor			
Do	.do	1874	12.86	Cochran	April .	1883	13.20	Do			20.43	Fort Arbuckie	Aug	1856	10.
Do		1544	10-18	Covington	April .	1883	10-70	Do	do	1848 1840	11.29	Fort Gibson	Feb	1851	10.
ke City	Jan	IROB.	13.00	Culloden	Mar	1853	13-42	Do			10-13	Do	May	1840	10.
Do	July		12-33	10	NOV	1852	14-43	Do			10.27	Fort Towson	Feb	1851	11.
Do	do	1859	11.20	Do	Jan	1885	11.60	Do	Aug		10-12	Do	April .	1840	13.
Do	Sept.	1859	14.05	Dahlonega	Jan	1885	10-00	Do	.do	1841	20.37	Do		1842	10.
Do	do	1866	13-25	Do	Mar	1886	13-47	Do	do	1847	12-81	Do	June .	1839	17.
MODS	une .	1886	11.68	Do	April .	1874	12.97	Do	ob	1849	13-24	Do	do	1842	14-
Do		1867	10-29	Dalton	Feb.	1861	11.12	Do		1859	17-15	Fort Washita	Mar.	1849	10-
Do		1807	17-32	Dupont	April .	1879	13-50	Do	.do	1858	14-20	Do	do	1849	14-
Do	Aug !	1997	81.17	Elleralie	Jan	1982	16-40	Sandersville	June .	1886	10.80	Do	June .	1846	10.
vo Oak	uly	tBlia	10.98	Do	do		12.78	South Bend	June .	1873	10-20	Do	July	1849	13.
Do	do .	1886	II-14	Do		1881	10-20	Sparta	Fah	1858	11.02		Sont	1966	
Do	luly.	1807	10-85	Do	Aug	1864	11.90	Do	July	1860 1855	10-61		Bept July	1866	10.
Do		1885	12.54	Forayth	Jan	1881	10.08	Do	Aug	1855	11.30		June .	1875	10.
		1990	14.00	Do	Mar	1875	12.87	Do	.de	1859	13-27	Do	July	1873	11.
Do					180	2 Miller	10.14	Thomaston	Nov	1856		Die			
Do	do 1	1887	10-15	Do				The amount of the second	Am		10.49	Do	do	1875	10.
Do	do I	(886	10-15 11-43 11-10	Do	,do	1881	10-00	Thomasville	April .	1883	10.49	Blue Lick	June . May	1886	10.

78X 1/18E/181	ly rais	yfall .	of 10 i	nches or more-Cont	inued.				Month	ily ra	infall o	f 10 inches or more.			
State or Territory and station.	Month.	Year.	Amt.	State or Territory and station.	Month.	Year.	Amt.	State or Territory and station.	Month.	Year.	Amt.	State or Territory and station.	Month.	Year.	Amt.
Indiana—Cont'd.			Inches.	Iowa—Cont'd,	6		Inches.	Kansas-Cont'd.			Inches.	Louisiana-Cont'd.	1		Inche
	June .	1869	10-37	Fort Madison	Sept		12-48	Independence	June .	1881	11-26	New Orleans		1853	11.
	Aug Feb	1886	10.50	Glenwood(1)	May	1878	11.95	Leavenworth	July .	1858	14.20	Do			
Evansville	Jan	1884	715.00	Do(2)	do		10.45	Le Roy	do	1872	11-13	Do(1	do	. 1873	10.
Do	Feb	1882	14.62	Do	July		10.20	Manhattan	do	1878	12-71	Do(2			12-
	April . June .	1886	10.12	Granville	Oct	1881	14.03	McPherson	Aug	1876	10.70	Do(3)	Bent .		10.
Kentland	Feb	1869	10.47	Grinnell	June .	1881	12-44	Do	June .	1878	10.30	Opelousas	June	1886	10.1
Do	April .	1869	14-25	Do	do	1882	11.80	Morse-Pontiac	July .	1875	13.00	Uskaloosa	Mar .	1875	13-
	July	1869	10.10	Hampton		1881	11.70	Olathe	do	1865	11.25	Point Pleasant	April Jan	1883	13.
La Grange	Feb	1885	13.50	Harvard	do	1883	12.20	Do		1865	15.83	Do		1886	15.
La Porte (near)	June .	1869	10-20	Hesper	July	1878	13.20	Do	do	1866	10.60	Do	Feb .		15.
	July	1869 1858	12-10	Homedale	May		11.68	Do	July .	1865 1869	13.75	Do	Mar		11.
Madison	Mar	1865	11.13	Do	Sept	1878	12.84	Do		1865	17.70	Do	April		12.
Do	May	1865	10-74	Indianola	July	1884	11.51	Do	do	1868	14-40	Do	do	1874	16.
Maranga	Aug Feb	1864	10.00	Iowa City	May June .	1867	10.60	Do	Sept July .	1866	11.56	Do			14.
Marengo		1884	15-90	Do	Aug	1881	12.55	Rolling Green	May	1878	12.05	Do			19-
Do	April .	1887	10.78	lowa Falls	do	1867	17.20	Santa Fe	Aug	1886	10.00	Do	May	1872	10.
Do	Aug	1888	18.00	Jenerson Township .	May	1882	12.30	Stanley	June .	1876	13.20	Do		1878	18-
Martinsville Merom	July	1882	15.82	Keosauqua	June . May	1882	13.19	Sterling Sycamore Springs	July	1885	10.86	Do	July .	1820	11.
Milford	Aug	1877	12.73	Do	June .	1882	11-48	Waterville	do	1878	10-79	Do		1877	14
Mishawaka	June .	1959	13.15	Libertyville	May	1882	12-90	Kentucku.		-		Do	do	1880	16.
Mount Hope	July	1873 1868	10.58	Lucas	June .	1881	12.85	Bowling Green Burnside	Feb	1883	10-15	Port Eads	Julydo	1881	13.
Do	July	1869	11.15	MacGregor	July	1881	10.55	Danville	Mar	1867	10.02	Do	Aug	1881	14-
Do 8	Sept	1866	11.72	Do	do	1883	10.74	Frankfort	Feb	1883	10.15	Rosedale Plantation.		1874	II.
	May	1883	11.34	Manchester	July	1876	10.31	Midway	do		10-11	Do		1873	15.
Do	June	1861	14-71	Marble Rock Marshalltown	May July	1873 1881	13.70	Do	Sept	1858 1866	16.65	Shreveport	April.	1873	11.
New Harmony	June .	1862	10.32	Mineral Ridge	do	1869	11.30	Paducah	May	1882	10-31	Sugar Experim tst'n	June .	1888	12.
	Sept	1866	10.74	Do	Sept	1869	14-40	Springdale	Mar	1854	10.26	Terre Bonne	Aug	1883	14.
North Liberty		1886 1886	15.00	Mount Pleasant Muscatine	June .	1877 1853	13.12	Do	July .	1872	10.81	Thibideaux		1887	14.
Rensselaer	Mar	1868	11.25	Do	June .	1849	12-20	Do	Sept	1866	12.80	Vidalia	April .	1885	10.1
Do 1	May	1867	15.50	Do	Aug	1849	12.20	Louisiana.				Do	May	1867	15.0
Do		1868 1869	13.90	Nashna	Jan	1881	13.00	Alexandria	June .	1885	11.47	West Melville	do	1886	10.1
	Sept	1868	11.37	Nashua New Hope Township	June .	1878	12-94	Algiers		1886	36.91	Biddeford	May	1850	13-1
Richmond(1)	May	1858	11-87	Do	do	1879	10.60		Feb	1875	10-20	Brunswick	Mar	1846	11.2
Do(2)		1858	12.00	Do	Sept	1876	12.60	Do		1876	11-10	Do	May		11.4
	Sept	1866	18-44	New London	June .	1881	17-37		July . April .	1874	11.10	Do			17-5
Do J	July	1874	11-30	Do		1883	13.30		July .	1883	11.27	Do		1843	12-2
t. Meinrad's Abbey		1875	14.98	Oskaloosa	do	1881	12.40	Do	Aug	1882	11.72	Do	Nov	1845	17-7
Do	do	1866	12.35	Pleasant Plain	Oct	1865	15.00	Baton Rouge	Jan	1847	11.60	Do Buckfield	Aug		10.1
Do		1873	10.38		Sept	1860	13.40	Do		1850	12.30	Cornish	May		10.1
team Corners /	April.	1873	11.90	Sac City	May	1870	10.50	Do	do	1876	13-20	Do(1)	Oct	1869	11.8
alparaiso J	July	1869	11.25		Sept	1872	10-40	Do		1846	17.20	Do(2)	do	1869	13.0
Do	May	1865	10.23		.do .	1881	13.35	Do		1874	14.18	Fort Preble(3)	May	1850	15.5
Do 8	Sept	1866	15.25	Spring Grove (near).	June .	1865	16-20		June .	1846	16.00	Gardiner	Mar	1859	10.0
lbion J	Inla	-00-	****		Sept	1876	10.74	Do	July .	1846	14-40	Do	May	1850	11.7
Igona A		1881	13.53	Vanter's Grove	.do	1876	10.40	Do		1848	11.80	Oxford	Oct		10.1
fton J	une .	1882	11.00	Do	Aug	1869	14-00	Do		1853	11.18	Perry	Mar	1859	12-2
luburn 8		1887	10-88	Do		1870	12-94	Do		1846	15.90	Saco	Nov		13-3
langor	une .	1881	13.00		June .	1870 1860	10.90	Do		1848	12-10	Standish	May Jan		10.0
Do	July	1876	10.59	Waukee	.do	1882	18.95	Black River	Jan	1858	10-82	West Waterville	Oet		13.8
loomfield 0)ct	1881	10.36	Waukon	.do	1882	10.12	Cheneyville	June .	1886	26-59	Maryland.	×4	.00	
loonesborough 8 lorder Plains J	lalv.	1870	13.69	Kansas.	Feb	1867				1882	11.35	Annapolis	Aug	1867	10.2
rookside J		1869	11.50		Aug	1870	13-10	Collins	June .	1871	13.90	Do	Sept	1866	10.6
Do J		1876	10.30	Atlanta	Sept	1874	12.70	Do	July .	1871	10.35	Baltimore		1821	10.7
Do A		1873	10.10	Argyle Baxter Springs	May	1882 1869	11.02	Do	Oct	1871	12-50	Do Bladensburg	Aug July .	1846	10.9
rush Creek S	e pt	1881	11.35	Do	Sept	1868	13.65	Do Coushatta	May	1871	11.52	Fallston	Aug	1885	10.7
urlington J	une .	1881	13.55	Brookville	July .	1885	12-05	Delhi	April .	1872	10.65	Fort McHenry	Mar	1872	10.0
Do 8	do	1882	15-41	Buffalo Creek	May	1872	10.21	Do	May	1871	11.83	Port Severn	Sept	1843	10.5
	une .		10-54	Clay Centre	.do	1882	10.37	Do Delta	April	1887	11.25	Fort Severn Fort Washington	Aug	1843	11.5
larinda J	uly	1872	10.85	Do	June .	1866	11.70	Fort Jessup	.do	1838	10.80	Mount Airy	Mar	1872	10-4
lermont		1881	11-12	Do	July .	1867	11-35	Do	June .	1841	15.70	Do	Aug	1873	15-9
linton S		1868	10.51	Do	Aug Sept	1868	15.35		Mar	1846	14-25	Mt. St. Mary's Col	Mar	1867	10.8
olumbus City J	une .	1881	10.00	Crawfordsville	July .	1869	12.30			1846	13-75	Saint Inigoes	Mar	1872	12.8
Doouncil Bluffs	do	1882	11.26	Creswell	May	1977	11.81	Do	Sept	1843	15.26	Do	April .	1874	12.9
rawfordsville	do	1883	14-30	Do	June .	1876	10.08	Fort Wood		1846	10.61	Do	July .	1872	10.6
resco J	nlv	1883	12.98		April . July .	1885	11-50			1846	18.17	Do	Aug	1872	10.3
reston J	une .	1878	11.16	Fort Hays	Mar	1876	15-00	Do		1843	10.49	Do	Oet	1872	11.0
Do	do	1883	12.27	Fort Leavenworth	Jan	1871	711.25	Do	Nov	1844	10.68	Schellman	May	1860	12.5
Do M		1868	11.84		April .	1884	12.00	Grand Coteau		1883	13-30	Do	July .	1863	13.1
Do		1868	13.04	Do	.do	1884	15.00			1884	10.20	Woodlawn	Sept	1855	11.3
Do J	une .	1869	11.89	Do	June .	1844	12.00	Do	May	1884	14-03	Do	do	1873	11.5
Do J	uly	1869	11.23	Do	.do	1845	15.80	Do	June .	1886	11-31	Woodstock College	do	1873	10.3
Do A enmark J	nne	1877	13.33	Do	July	1887	11.35			1885	13.66	Do	Jan	1883	11.2
es Moines	do		10.25	Do	Aug	1858	10.57			1886	10.81	Amherst	June .	1862	11.6
ysart	do	1876	10.34	Do	.do	1887	11.30	Monroe		1886	10.17	Do	Aug	1856	12.1
Do J	uly	1876	10.85	Fort Riley	.do	1876	12.86	Do	July	1887	12-27	Do	Sept	x868	10-6
Do	do	1881	10-77	Fort Scott	May	1844	10.20			1886	11.55	Do	Oct	1855	10.0
orence A	ug	1877	12.65	Do	.do	1844	14.79	Do		1886	10.34	Beare Mountain	Sept	1869	10.0
	uly	1878	10-23	Do	.do	1852	10.74	New Orleans	Jan	1871	12.05	Boston		1852	10· I
orest City Jı	uly	1844	10-14	Do	June .	1844	12.64	Do	April .	1846	10-70	Do	.do	1857	10.8
ort Atkinson Ji	ob	0.00			.do	1845	94.96	Do	.do	1872	12-44	130 (a)	A 1107	1826	11.3
ort Atkinson Ji	eb	1854	10.80	Do		7844	24-56	Do	Impo			Do(1)			
ort Atkinson Ji ort Madison F Do M	eb lay uly	1851	10.80	Do	July . June .	1844	10-50	Do	June .	1843	14-57	Do(2)	.do	1826	12-1

	dy run	nfall	of 10 is	nches or more—Cont	inued.			Mont	hly rais	fall	of 10 i	nches or more—Cont	inned.	-	-
State or Territory and station.	Month	Year.	Amt.	State or Territory and station.	Month	Year.	Amt	State or Territory and station.	Month	Year.	Amt.	State or Territory and station.	Month	Year.	Amt.
Massachusetts-Cont'd		-	Inches.	Mississippi-Cont'd.			Inches.	Missouri-Cont'd.			Inches.	New Jersey-Cont'd.		1	Inches.
Cambridge	July.	1863	12.43	Brookhaven		1884	11.83	Kirksville			12-61	Patterson	Mar . May .		16.11
Dudley	July .	. 1887	10-49	Do	Aug	1869	10.61	Lexington	June .	1883	10-72	Do	June	. 1881	11.74
Pall River	Feb	1886	10-73	Church Hill	Sept	1877	14-73	Maeon		1876	11.98	Do	July	. 1880	12.00
Do	Nov	1876	11.08	Clinton	Mar	1871	11.38	Miami		1879	11.11	Do	Aug		13.40
Fitchburgh	Aug		10.72	Coleman	Feb	1874	11-70	Do	do	1883	11-45	Princeton	do	. 1880	11.13
Fort Warren	Mar	1873	711-20	Do	do	1863	12.96	Moselle	May	1884	14-17	Rio Grande Do	July	1875	10.87
Do	do	1877	10.48	Do	Feb	1863	11-74	Mount Vernon	do	1872	13-70	Do	Nov .	. 1871	10.13
Gilbertville		1885	11.19	Do	do	1875	11.45	Nevada Oregon		1872	11.30	Salem	June	. 1885	11.55
Hinsdale	Bept	1868	10.32	Do	Mar	1859	10-02	Do	July	1866	12-24	Sergeantville	May		10.90
Kingston(1)	Oct	1869	12-60	Do	do	1871	10.49	Phelps City	June .	1883	14-94	South Orange Squan Beach			12.55
Do(2)		1874	10-25	Do			12.25	Do	Aug	1880	10-50	Do	Sept		10.34
Do	Aug	1856	18.12	Do	do	1869	11.26	Pleasant Hill	April .	1885	10-05	Trenton	Aug		14.08
130	Sept	1868	13.42	Do	May	1866	10-34	Rolla	May	1844	11.15	Vineland Do	Jan		10.63
Lowell	Aug	1887	10.93	Do	July	1868	11.55	Do	do	1858	10-64	New Hampshire.		100	
	May	1868	11.05	Do(1)			12.00	Do	June .	1847	10-04	Auburn	Jan	1880	14-17
Do	Aug	1856	12-50	Do	Aug	1861	11.08	Do	July	1849	11-53	Do	April .	1878	13.80
Do	.do	1807	10.80	Do			12.83	Saint Louis Arsenal.		1844	11.03	Dumbarton	May	1882	11.50
Do	Sept	1868	11.75	Do	do	1860	11.01	Do		1847	11.47	West Enneld	July .	1856	11.85
Mendon	Oct	1869	12.50	Canton			10-44	Do Do	do	1848	18.96	New Mexico. Fort Bayard			
	Aug	1856	13.85	East Pascaquala			12.47	Do	July	1849	13.67	Fort Craig	Aug	1873	11.73
New Bedford	July	1830	10.67	Edwards	do	1882	10-11	Do	Oct	1847	10.07	Fort Sumner	July .	1865	10.63
	Aug Sept	1826	10-72	Fayette			12.40	Springfield	Nov	1847	10.05	Fort Tulerosa Fort Wingate	Aug	1873	10.48
Newburyport	Aug	1856	12.09	Do	do	1883	12.40	Do	June .	1877	15.20	New York.		1873	11.25
	Jan May	1875	15.20	Do			12.40	Stoutland	July	1875	16.70	Adams	Nov	1873	11.16
Do	July	1872	11.15	Do	May	1873	12-50	West Glaige	do	1875	17.80	Albany	Aug	1856	10-14
North Attleborough.	Aug	1856	10-12	Fellowship	April .	1871	23-60	Wyacanda Prairie	Sept	1862	10-31	Do	Oct	1869	13-48
North Billerica Petersham	.do	1872	10.40	Do(1)	Mar	1874 1869	13.66	Montana. Fort Ellis	May	1885	12.36	Ardima (Phillipst'n)	Aug	1856	13-11
Princeton	.do		12.39	Do(2)	do	1869	15.66	Nebraska.				Do	Sept	1882	11.56
Richmond	Jan	1870	14-06	Holly Springs(3)	Feb	1869	12.20	Agricultural College. Ashland	June . July	1883	12.06	Barnesville	May	1870	11.25
Do	.do	1865	12.58	Do	Mar	1871	10.40	Bellevue	Mar	1858	11.79	Beverly	Aug	1856	13.11
Do		1862	14-50	Do	do	1874	13.80	Do		1858	15.85	Do	Sept	1868	10.29
Do	July	1861	15-37	Do		1872	10.33	Do	Aug	1871	14.10	Boyd's Corners	Oct	1869	10-49
Do	Nov	1860	10.86	Jackson	Nov	1855	10.93	Do	Mar	1882	20.00	Bridgewater	April .	1835	11.31
Do	April .	1864	10.95	Do	April .	1883	11.00	Do	June . May	1883	15-42	Brookhaven	Oct	1869	12.86
Do	Oct	1855	11.81	Marion		1868	14-32	De Soto	Sept	1877	11.83	Ceres	Mar	1840	10.46
Fopsfield	July	1863	15-68	Natahar		1869	12.40	De Witt	June .	1883	11.30	Croton Dam	June .	1871	14-36
Do		1863	11.66	Natches	Feb	1841	13.80	Fort Kearney	Sept May	1869	10.74	Do	July .	1863	10.27
Westborough	Sept	1884	11.30	Do	do	1865	12.70	Fort McPherson	do	1868	10.00	Fairfield	July .	1828	10.89
	June . July	1862 1863	11.94	Do	April .	1886	12.01	Howard		1877	10.05	Fishhill Landing Flatbush	June . April .	1862	11.17
Do	Aug	1856	14-17	Do	do	1867	11.27	Do	do	1885	11.79	Do	Aug	1843	15.76
	Oct May	1855	10.27	Do	June . July	1843	10.68	Nebraska City Omaha	June . July	1871	10.85	Do Flushing	Sept Mar	1847	10.65
Do	Aug	1867	10-15	Do	Nov	1843	11.24	Do	Aug	1857	10.05	Fordham		1876	10-19
Williamstown	.do	1856	14-79	Okalona Oxford	June . Nov	1886	11.71	Do	May	1883	11.29		do	1843	15.26
Do	.do	1869	12.93	Pass Christian	Sept	1843	10.00	Plattsmouth		1884	18.02	Fort Hamilton	Sept June .	1847	12.20
Worcester		1852	10-77	Paulding	April .	1871	23.60	Do	do	1875	11.92	Do		1843	14-05
Do	.do	1852	10-77	Philadelphia Prairie Line	Aug	1871	10.80	Btockham	Mary	1878	10.55	Do	Sept	1884	10.60
Do	.do	1856	13-14	State Line	July	1882	16.37	Do	June .	1883	10.30	Fort Porter	Sept	1866	11.79
Do	.do	1867	10.79	Vicksburg	dan	1841	12.10	Syracuse		1882	10-95	Garrison's	Aug	1867	10.75
drian gr I Col., Lansing	Oet	1881	10.71	Do	Feb	1853	13.83	Weeping Water	do	1883	15-35	Do	Oct	1868 1869	10-49
gr'l Col., Lansing	June .	1883	11.35	Do	.do	1869	13.96	Do	Aug	1883	11.05	Granville	July .	1848	12-52
lattle Creek	Aug	1885	10-20	Do	July	1868	14-14	New Jersey. Allowayston	Aug	1873	12-47	Do	April .	1877	13.00
ooper etroit Barracks	.do	1861	12.25	Do	Nov	1843	11.30	Atco	ob	1873	10-44	DO	May	1876	19-40
Do	July	1855	11.66	Water Valley	Mar	1848	10.45	Barnegat City Bloomfield	April .	1854	12.84	Do Humphrey	Aug.	1869	714-40
ast Tawas	April .	1883	13.30	Wesson	June .	1873	11.50	Do	May	1857	11.58	Jamestown	July .	1851	11.22
rand Rapids	Sept	1883	10.03	Archie	May	.00.				1857	10.62	Jamaica	April .	1854	11.19
itchfield	June .	1883	10-12	Bedford	June .	1883	14.50	Do	Aug	1857	12.18	Do	Aug	1826	12-53
Do	.do	1869	10.05	Booneville	.do	1877	10-19	Burlington	oo	1867	10-50	Kinderhook	July .	1832	10-19
iles	Feb	1881	10-02	Brunswick	July	1879	10-50	Do	Ang	1887	10.02	Madison Barracks McGranville	June -	1850	12.39
orthport	an	1867	11.50	Do	.do	1875	11.35	Do	Sept	1868	10.85	Moriches	Oct	1869	12.86
nrkville	do.	1885	10.87	Do	.do	1886	10.38	Egg Harbor City	May	1886	15.07	Nichols	Feb	1874	14-05
Do	Aug	1885	10-48	Centreville	Aug	1870	12.18	Freehold	.do	1875	13.42	New York	April .	1854	10.09
Minnesota.	furla	-0-0		Do	June .	1885	10.73	Do	Sept	1868	10-10	Do	June .	1865	10-42
ort Snelling	Aug	1838	10-50	Dundee	April .	1861	14-50			1887	15.29	New York City	Ang	1867	10-18
inneapolis	do	1869	11.64	_ Do	Sept	1866	11.54	Long Branch	Mar	1870	10.57	Do	Sept	1843	15-26
aint Paul J	lept	1869	11-45	East Prairie	do.	1869	10-70	Do	Aug	1875	11.93	Cooper Union, City	Aug	1873	10-30
Do 8	Sept	1860	10-15	Do	Sept	1865	10-20	Do	Nov	1874	10.99	North Hammond	July	1876	10.00
Minsterippi.				Frankford	July	1875	14-96	Mattawan	July	1887	14-00	Do	Sept	1866	10-44
gr'l and Mechanical College, Starkville.	řeb	188¢	11.30	Giasgow	June . July	1883	11.00	Newark		1876	11-37	North Salem	Aug	1856	12.10
rtonish J	an	1882	12-40	Harrisonville	June .	1865	12.16	Do	Aug :	1854	11-37	Ogdensburg Oneida	Feb	1856	15.67
Do	do	1883	13.03	Do	July	1865	10.66	Do	.do	1867	10.61	Do	May	1868	10.05
Do A	pril .	1884	14-15	Houstonia	May June .	1867	10.64	Do	.do	1875	22.48	Do		1866	10.48
Doccession B	day	1882	10.08	Jefferson Barracks	May	1859	11.28	Do	Sept 1	1847	11.30	Do	July .	1874	12.61
		1883	11.02	Do		1852		New Brunswick	June .	1867	11-42	Do	Aug	1870	14-40
iloxi 8	ept	1887	11.47	Do	July	1840	11.45	Do	Aug 1	1860	10.59	Do	Nov	1868	10.70
		1875	10-45	Kansas City	Inne .	1883	10-95	Do	do	Gen	10.79	Onondaga	Textor.	1828	10.23

State or Territory	th.	2	-	State or Territory	oth.	h,		State or Territory	nth.	5	4	State or Territory	l de	1,	
State or Territory and station.	Month	Year.	Amt.	and station.	Month	Year.	Amt	and station.	Month	Year	Amt.	and station.	Month	Year	Ame
New York-Cont'd.			Inches.	North Carolina-Con.			Inches.	Ohio-Cont'd.	Inlu	»Oma	Inches.	Oregon-Cont'd. Fort Umpqua	do	1858	Inci
xford	June . Feb	1853	11.40	Fayetteville	Jan	1879	10.30	Margaretta Towns'p. Marietta		1872	10-03	Do			15
alermoenn Yan		1870	11.03	Forest Hill	April . Feb	1873	11-22	Do	July .	1831	12-12	Do	do	1861	10
Do	July .	1863	10-23	Franklin	Jan		10-40	Do	May	1858 1866	12.42	Do			10
ackett's Harbor	Oct	1850	12.30	Do	Feb	1881	10.90	Marion New Concord	June .	1849	10.45	Do	Nov		11
Bo		1854	11.69	Do	Mar	1875	10-40	New Lisbon	do	1866	11-19	Fort Yamhill	Jan	1857	11
henectady		1836	10.87	Do	do	1880	12.40	Oberlin	do	1855	10.65	Do			10
ng Sing	do	1870	14-18	Fort Johnston	Oct	1876	10.00	Portsmouth Ripley	do	1865	10.59	Do			33
Do	Mar	1869	10-64	Goldsborough	June . July .	1867	11-15	Sandusky	Sept		10.59	Do	Feb	1859	10
Do		1865	13.38	Do		1860	11-46	Savannah	June .	1855	16.60	Do			10
Do	do	1868	14-26	Do	do	1873	10.82	Sidney	Sept	1886	10-25	Do			11
Do		1867	20.15	Do		1886 1880	14-25	Troy	April .	1862	14-67	Mount Angel	Jan		3.5
Do		1871	18-33	Hatteras Highlands		1882	11.50	Urbana	June .	1855	10.78	Do Mount Hood Station.	Mar	1887	10
Do		1865	16-18	Do	Feb	1881	12.90	Do	do	1868	10.38				10
Do		1867	15-18	Do	do	1882	10.10	Wellsborough	Sept	1866 1885	15.88 15-25	Oregon City			I E
Do		1868	11.81	Do	Mar	1884	13-55	Westerville	Sept	1866	13.86	Do			10
Do		1868	21-97	Do	do	1880	12.00	West Milton	Feb	1887	10.75	Port Orford	Jan		11
Do		1863	10.68	Home(1)	do	1882	13-37	Williamsport(near).	Jan	1870	13-35	Do	April .	1856	81
Do		1869	16.98	Do (2)	Oct	1882	13.40	Oregon.	Jan	1866	14-15	Do		1854	12
Do		1871	12-41	Kenansville Kicty Hawk	July .	1882	15.36	Do		1867	14-45	Do Pennsylvania.			
Do		1809	11.31	Lenoir	May	1873	11.50	Do	do	1887	12-58	Beaver Seminary	Sept		10
ath Hartford		1867	10.95	Do	do	1885	10-10	Do	Feb	1867	10-71	Blooming Grove	May		I I
Do	Aug	1863	10-12	Do		1884	10.30	Do	Jan	1866	27.00	Blooming Grove		1867	1 2
Do	Oct	1869 1860	13.85	Lincolnton	Aug Feb	1886	10-20	Do	do	1855	21.52	Do	Aug	1871	1
th Trenton	July .	1869 1856	10.70	Ro	May	1886	11.40	Do	do	1857	16.07	Brookville	do	1885	3
rytown	Sept	1868	10-49	Lumberton	Aug	1882	10-09	Do	do	1859	10.82	Carlisle	June .	1857	1
у	Aug	1856	11.09	Marion	do	1887	14-18	Do	do	1860	13.56	Easton		1867	1
Ca	do	1832	11-44 77.85	Mount Olive Mount Pleasant	July	1887	10-45	Do	do	1864	11.64	Ephratah		1867	1
mpsville Do	Jan April .	1874	11.85	Do		1875	11.76	Do	do	1865	12.13	Do	do	1871	1
Do	May	1867	12.61	Murphy	Jan	1882	14-80	Do	do	1866	16.16	Fallsington	do		1
Do	June .	1866	11-38	Do	do	1882	14.85	Do	do	1867	17.52	Franklin	July .	1869	1
Do	do	1868	10.05	Do	Feb	1863	10.60	Do	do	1869	11-78	Do Gettysburgh	May	1858	1
Do	do	1874	10.38	Do	Mar 7.	1890	15.10	Do	do	1871	22.16	Do	Aug	1855	1
Do	July .	1861	16.82	Do	April .	1874	15.40	Do	do	1873	16.06	Harrisburg	Jan	1870	1
Do	do .:	1874	12-41	New Garden	July .	1886	12-44	Do	Feb	1851	10.95	Do		1858	3
Do		1869	10.58	Now Piper Inlet	Aug	1884	13.30	Do	do	1857	13.05	Do		1857	1
Do	do	1873	11.01	New River Inlet Oxford	July	1868	10-20	Do	do	1861	13-74	Do		1863	1
Do	do	1864	12-53	Do	Aug	1823	12.95	Do	do	1863	15-53	Do	Aug	1867	1
Do		1873	10.53	Portsmouth	Sept	1867	10.00	Do	do	1867	14-13	Do		1864	3
Do	do	1870	14-40	Portsmouth	June .	1883	11.09	Do	do	1871	17.57	Johnston		1868	3
Do	Sept	1856 1868	11.10	Raleigh Scott's Hill	July.	1867	14-40	Do	Mar	1857	11.63	Do		1868	1
Do	Oct	1861	10.91	Smithville	do	1879	10.21	Do	do	1859	21.32	Moreland	June .	1867	1
Do	do	1872	10-04	Do	do	1881	10.65	Do	do	1862	17-41	Do	Aug	1867	1
Do	Nov	1868	11-35	Do	Feb	1886	11.99	Do	oo	1864	13.65	Do Morrisville	Oct	1833	3
Bt Point	Mar	1837 1854	10-53	Statesville		1884	10.50	Do	do	1866	11.83	Mount Joy	May	1858	1
Do	May	1837	13-35	Do		1868	12.62	Do	do	1871	17.11	Philadelphia	Sept	1859	1
Do	do	1838	12.90	Tarborough	July .	1887	11.63	Do	Now.	1873	18-55	Philadelphia	June . July .	1867	1
Do		1839	11.25	Do	Aug	1887	10.50	Do	do	1850	13.26	Do	Aug	1867	1
Do		1868	11.50	Trinity College		1869	13.00	Do	do	1855	10-19	Philipsburgh	Feb	1887	1
Do	June .	1838	12.27	Weldon	July .	1886	10-40	Do	do	1860	12-44	Ringtown	June .	1872	1
Do	do	1837	13.10	White Sulph. Sp'gs	Aug	1873	10.27	Do	do	1861	15.26	Shamokin	May	1862	1
Do	July .	1836	10.60	White Sulph. Sp'gs	Jan July	1882	12.12	Do	do	1864	12.16	Tioga	do	1867	1
Do	Ang	1843	10-48	Wilmington			12.80	Do		1866	17.73	Towanda	Aug	1861	1
Do	do	1856	11.20	Do	Aug	1879	11.37	Do	do	1870	10-31	Wellsborough	Jan	1886	- 3
Do	do	1807	11.70	Do	Sept	1873	14-03	_ Do	do	1871	14-08	Do	Feb	1883	1
Do	do	1868	11.66	Ohio.	Ameil	v9=0	10.10	Bandon	Jan Feb	1886	13.72	Do	Mar	1884	- 1
Do	Sent	1868	11-72	Bellefontaine Bowling Green	Mar .	1858	14-00	Block House	Jan	1859	12.70	Do	April .	1886	1
Do	.do	1856	11.27	D0	June .	1869	10.07	Do	Feb	1859	12.30	West Chester	June .	1881	1
Do	do	1868	11.22	Canal Dover	Feb	1883	10.65	Do	Mar	1859	22.57	West Chester	Aug	1867	1
Do	Oet	1855	10.25	Cheviot	do .	1873	13.91	Do	Sept	1859 1858	13.80	Williamsport	Mar	1876	1
Doite Plains	Nov Jan	1846	10-02	Do	Aug	1875	12-10	Eola		1872	13-24	Williamsport York Sulphur Sp'ga . Rhode Island.	Aug	1873	1
Do	.do	1882	11.50	Cincinnati	June .	1845	11.50	Do	Nov	1877	13.01	Rhode Island.	20.4		
Do	do	1883	13.70	Do	Sept	1866	11-21	Eugene City	Jan.,.	1880	13-15	Block Island	rep	1886	1
Do	do	1878	11.10	Cleveland	June .	1855	10-33	Fort Hoskins	do	1857	16-16	Fort Adams	May	1863	1
Do	Feb Mar	1883	13.00	College Hill	Jan .	1870	10.15	Do	do	1863	19-55	Do	June .	1842	1
Do		1876	12.40	Do	Feb	1887	10.25	Do	.,. ob.,,	1864	13-48	Do	Oct	1843	1
Do	July .	1875	11.20	Do	Mar	1868	10-48	D0	reo ,,	1857	10.90	Lonsdale	Feb	1866	1
Do	do	1880	10.00	Do	April .	1880	10.50	Do	00	1858	12.12	Newport Olneyville	Mar Feb	1877	1
Do		1856	11.27	Do	Sent	1864	12.50	Do	do	1859	19-46	Pawtucket	.,da		1
Doitestown	Jan	1875	10-31	Eaton	May	1865	10.30	Do	Mar	1859	15-56	Providence	May	1868	1
lett's Point	do	1879	10.40	Do	sept	1804	10-09	Do	OD	1863	13-77	Do	Feb	.1886	1
North Carolina.	-		1	Elk Run	do	1866	10-19	Do	do	1864	11.05	Aikon	July	1900	
eville	April .	1885	12-10	Gallipolis	Moril.	1854	12.65	Fort Stevens	do	1866	12.60	All Saints	July .	1854	1
Do	Aug	1887	28.65 11.50	Germantown Hanging Rock	Feb	1882	10.38	Do	do	1873	14-75	Do			1
ufort Hospital	Jan	1884	10-57	Kenton	Jan	1876	10.76	Do	do	1874	18-08	Anderson	May	1886	1
Do	ob	1885	12-90	Do	Mar	1868	12.97	Do	Feb	1867	13-77	Do	Aug	1887	1
Do(1)		1884	10.00	Do	do	1876	11.62	Do	OD	1872	15-28	Brewer Mines	Aug		1
Do(1)	do	1885	13.00	Do	May	1809	16.75	Do	do	1873	10.26	Camden Do	Aug	1849	1
Do(2)	Mar	1885	13.08	Do	Japa	1873	11.13	Do	Mar	1866	10.75	Charleston	Mar	1843	1
Do	June .	1884	14-53	Do	July .	1872	13-95	Do	do	1873	20.76	Do	April .	1877	1
e Lookout	Aug	1877	13-33	Do	ob	1876	11.80	Do	NOV	1865	16.83	Do	June .	1739	1 3
Do	ob	1878	14-30	Do	Aug	1866	14-35	D0		1866	11.35	Do	July .	1738	
Do	do	1879	11.90	Do	eb	1871	12.81	Do	OD	1871	12.03	Do	do	1757	1
rlotte	Feb	1873	10-30	Lancaster	May	1858	11-18	Port Umpana	Jan	18574	13.72	Do			1
Do	April .	1873	10-50	Little Mountain Madison	May .	1870 1858	12.12	Fort Umpqua Do	do	1858	13-53	Do	do	1749	1
	Feb	1881	14.70	Margaretta Towns'p.	A	2000	12.63	Do	A.	1861	11.50	Do	do	7800	

	Month	ly ra	infall q	of 10 inches or more.				Month	ly rain	fall of	f 10 i	nches or more—C	Continu	ed.	
State or Territory and station.	Month,	Year.	Amt.	State or Territory and station.	Month.	Year.	Amt.	State or Territory and station.	Month.	Year.	Amt	State or Territor and station.	ry	Month.	Year.
South Carolina-Con.			Inches.	Tennessee-Cont'd.			Inches.	Virginia-Cont'd.	!		Inches.	Washington-Con	t'd.	- 1	
Do			15-15	Nashville Do		1880	12-37	Fort Monroe			13-50	Cape Disappoints	nent Oc	ot	1867
Do			10.79	Paris	Feb	1886	12.60	Do			14.00	Do			1868
Dossessesses	do	1751	11.67	Do	April .	1883	10.08	Do	do	1867	11-40	Do	d	0	1865
Do			14.66	Parksville Purdy (near)		1886	10-72	Do		1838	16.40	Fort Steilacoom.		n	1874
Do	do	1853	12-27	Riddleton	Jan		12-84	Linwood (Markam	2001	Tono	10.00	Do			1865
olumbia	Mar	1850	12-02	Do	Feb	1884	11.32	Stn)	April .	1871	14-50	Fort Vancouver .	Ja		1855
Do			10.09	Sailor's Rest	Jnne	1883	15.00	Lynchburg	June .		16.50	Fort Walls Walls		ov	1853
vergreen	Mar	1870	10-10	Smithville (near)	Jan		10.60	Piedmont	Sept	1870	10-40	Do	Fe	b	1862
Do	Aug	1507	10-78	Do	Mar	1884	14-90	Portsmouth	June	1856	10-08	Neah Bay	Ja	n	1866
orence			10-52	Trenton	Feb.	1874	12. 20	Powhatan Hill			10.80	Do	G		1864 1864
rt Moultrie	July .		13-35	Waverly	April .	1863	10-70	Richmond		1851	11.11	Do			1866
Do	do	1853	10.88	Waynesborough	June .	1886	11-53	Rougemont	Sept	1859	11-90	Do	Mi	ar	1864
Do			14-70	White Bluffs	May	1883	11.09	Snowville	do	1868 1869	11-57	Do	d	0	1866
Do			24-42	Austin	Aug	1860	10.88	Do	Feb	1869	10.20	Do			1866
Do	Sept		11.70	Do	Sept	1873	11-09	Do	Mar	1968	13-25	Do	Se	pt	1863
Mon	July .	1821	14-20	Do			10-41	Do			11-70	Do	d		1865
Powdysville	Feb	1822	10-10	Do			15-40	Do	May	1868 1868	14.63	Do	No.		1863
cienda Saluda	do	1873	15.00	Belknap			10.30	Do	.do	1869	18.40	Do	d		1863
Do			11-10	Blue Branch	April .	1872	12.30	Do	June	1869	12-20	Do	d		1865
Do	July .	1874	10-00	Do	Oct	1873	10-00	Do	Oct	1868	11.90	Tateosh Lt-House			1870
	Aug	1872	11.10	Bluff Settlement	do	1871	15-10	Do	.do	1868	117.20	Do	de	0	1872
deeville	July .	1662	10-62	Brackettville	May	1880	13-11	The Shades	Sept	1870	12.08	Do	Fe		1871
kwood	May	1852	11-45	Camp Verde		1875	11.85	Tribrook Farm (near Lexington	do	1970	15-88	Do	Mi	AF	1871
naria		1873	13.23	Clarksville	Feb	1873	10-12	U. S. Naval Hospital			13.00	Do	No		1870
at John's	July .	1853	13-33	Do	do	1884	10.38	(near Portsmouth).	Feb	1872	12-40	Do	de	0	1871
Do		1857	10-35	Do		1872	15.38	Do		1871	11.95	Union Ridge West Virginia.	Fe	b	1872
	Aug Sept	1852	15-93	Do		1874	17.00	Do	April .		26-15	Grafton	Me	ar	1967
rtansburgh (1)	May	1996	13.60	Do		1873	17-75	Do	.do	1874	10-10	Wisconsin.			
Do(2)	do	1886	11.99	Do	July .	1873	15.50	Do	May	1871	10.95	Ashland	Ma		1859
Do		1885	10-10	Clear Lake		1871	14-88 10-00	Do	June .		14-45	Barabo	···· Ma		1868
Toundated.		1003	14.50	Do	Sept	1887	10.00	Do	.do	1871	17.82	Do	Ju		1869
	Mar	1984	11.36	Corsicana	May	1884	12.58	Do	Aug	1867	23-75	Beloit	Ms		1858
wood	do	1886	18.10	Do Decatur		1882 1882	11.70	Woodlawn	.do	1871	15.55	Edgerton Greenfield	Ju		1873
tin		1882	18-11	Denison		1875	15-23	Bainbridge Island	Jan	1885	10.10	Manitowoc	seed Ju		1870
Do	Feb	1880	10-39	Do	June .	1880	10-00	Cathlamet	.do	1873	15.80	Mosinee	Ma	M	1871
Do	ob	1807	13-57	Fort Brown		1855	10.47	Do	Mar	1873	18.00	Do	Ap		1871
Do	do	1880	10-38	Fort Duncan	Sept June .	1854	10.70	Cape Disappointment Do	.do	1867	10.20	Do	Ma		1870
Do		1874	11-95	Fort Lancaster	Sept	1859	10.85	Do	.do	1869	15.60	Do	Ju		1871
Do	.do	1877	10-70	Fort Martin Scott	June .	1850	10-28	Do	.do	1874	14-54	Do	Ju		1870
Doeyville	Jan	1865	10.30	Galveston	May	1868	14-78	Do	.do	1874	12.19	Do	Ser		1870
Do	Feb	1864	10.66	Gilmer (near)		1873	10.41	Do	.do		12-75	Plymouth	Ju		1869
	Mar	1864	11.93	Fort Griffin		1878	10-19	Do		1865	13-55	Ripon	Ju		1883
	Feb		10-13	Hearne	May	1879	10.90	Do	, do	1868	13-50	Weyauwega	a. a.	0	1865
talian finrings	April .		and a												
talian Springs	April .	1884	10.50	Houston	do	1883	10-10	-	-						
talian Springs treville nwood Cottage	April . Mar	1884		Houston	June .	1883 1884	19-19		Daily 1	rainfa	ll of 2	2.50 inches or mo	re.		
talian Springs treville nwood Cottage mear Clarksville).	April . Mar	1884 1880	10-93	Do	June .	1883 1884 1878	19-19 14-10 10-91	1 4	Daily 1	rainfa	ll of 2	2.50 inches or mo			1
talian Springs treville nwood Cottage lear Clarksville). Do	Mar Feb Mar	1884 1880 1874	10.93	Jacksborough	June July .	1883 1884 1878 1882	19-19 14-10 10-91 10-51	1 4	Daily 1	1.		State or Territo-			1 :
talian Springs treville nwood Cottage near Clarksville). Do Do	Mar Feb Mar April .	1884 1880 1874	10.93 30.16 11.33	Houston	June do July . Aug July .	1883 1884 1878 1882 1879 1869	19-19 14-10 10-91	1 4	Daily 1	1.				fear.	Day.
talian Springs treville nwood Cottage near Clarksville). Do Do point (Spring arden)	Mar Feb Mar April .	1884 1880 1874 1865	10.93 10.16 11.33	Do	June do July . Aug July	1883 1884 1878 1882 1879 1869	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00	State or Territo-	Daily 1	rainfa Lea	ll of 2	State or Territo-	Month.	Year.	Day.
talian Springs treviile nwood Cottage tear Clarksville). Do reiand (Spring arden) Do	Feb Mar Mar April Jan Feb	1884 1880 1874 1865 1877 1873	10-93 10-16 11-33 11-80 11-70	Houston Do Jacksborough Do Laredo Laredo Lockhart Lone Point	June do July . Aug July	1883 1884 1878 1882 1879 1869 1869 1867	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00 11. 62	State or Territory and station.	Daily 1	1.	Amt.	State or Territory and station.	Month.	Year.	Day.
talian Springs treville	April. Feb., Mar., April. Jan., Feb., do., April.	1884 1880 1874 1865 1877 1873 1873 1874	10.93 10.16 11.33	Houston Do Jacksborough Loredo Laredo Levaca Lockhart Lone Point Melissa Do	June	1883 1884 1878 1882 1879 1869 1869 1867 1877 1881	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00	State or Territory and station.	1885	Day.		State or Territory and station. Arkansas—Cont'd Durham	Wouth.	Year.	
ialian Springs iteville	April. Feb Mar April. Jan Febdo April.	1884 1880 1874 1865 1877 1873 1875 1874 1877	10.92 30.16 11.33 11.80 11.70 13.98 17.60 12.30	Houston Do. Jacksborough Do. Laredo Lavaca Lockhart Lone Point Melissa Do. Do.	June do July . Aug July do Aug Feb do May	1883 1884 1878 1882 1879 1869 1869 1867 1877 1881 1873	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00 11. 62 13. 06 18. 11 21. 95	State or Territory and station. Alabama. Auburn	1885 1886	E. C. Day.	In. 2.98 3.07	State or Territory and station. Arkansas—Cont'd Durham	Month.	1876 1876	13 27
salfan Springs treville nwood Cottage ear Clarksville). Do Do zland (Spring arden) Do	April. Mar Feb Mar April. Jan Feb do April. April.	1884 1880 1874 1865 1877 1873 1873 1874 1877 1874	10-92 30-16 11-33 11-80 11-70 13-98 17-60 12-30 10-10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Meliasa Do Do Do	June	1883 1884 1878 1862 1879 1869 1867 1877 1881 1873 1881	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00 11. 62 13. 06 18. 11 21. 95 34. 85	State or Territory and station. Alabama. Auburn	1885 1886 1886	E. C. Day.	In. 2.98 3.07 3.00	State or Territory and station. Arkansas—Cont'd Durham	April	1876 1876 1876	13 27
talian Springs treville	April . Mar Feb Mar April . Jan Feb do April . do April Mar Mar	1984 1880 1874 1865 1877 1873 1875 1874 1877 1874 1885	10. 92 30. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Do Do	June	1883 1884 1878 1882 1879 1869 1867 1877 1881 1873 1881 1873	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00 11. 62 13. 06 18. 11 21. 95 34. 85 15. 18	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July	1885 1886 1886 7 1884	Base & Day.	In. 2.98 3.07 3.00 3.50	State or Territory and station. Arkansas—Cont'd Durham	April	1876 1876 1876 1881	13 97 1 18
ialian Springs ireville nwood Cottage ear Clarksville). Do	April . Mar Feb Mar April . Jan Feb do April . April . Mar April . Peb Mar	1984 1880 1874 1865 1877 1873 1875 1874 1874 1886 1886	10. 93 30. 16 11. 33 11. 80 31. 70 13. 98 17. 60 13. 30 10. 10 20. 03 18. 95 11. 80	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Mesquite	June July July July July Aug Feb do May June Feb	1883 1884 1878 1862 1879 1869 1867 1867 1877 1881 1873 1881 1873 1878	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00 11. 62 13. 06 18. 11 21. 95 34. 85 15. 18 13. 59 10. 75	State or Territory and station. Alabama. Auburu Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do do	1885 1886 1886 7 1885 1885	23 3 5 28 10 23-24	In. 2.96 3.07 3.00 3.50 3.50 5.50	State or Territory and station. Arkansas—Cont'd Durham	April	1876 1876 1876 1881 1879 1879	13 27
salfan Springs treville nwood Cottage ear Clarksville). Do .	April . Mar	1884 1880 1874 1865 1877 1873 1875 1874 1874 1886 1886 1887 1886	10-92 30.16 11-33 11-80 11-70 13-98 17-60 12-30 10-10 10-03 28-95 11-80 14-17	Houston Do. Jacksborough Do. Laredo Lavaca Loue Point Melissa Do. Do. Do. Do. Do. Do. Mesquite. New Ulm	June July July Aug July Aug Aug Feb do May June June June June June June	1883 1884 1878 1862 1879 1869 1867 1867 1877 1881 1873 1878 1880 1880	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00 11. 62 13. 06 18. 11 21. 95 34. 85 15. 18 13. 99 10. 75 10. 60	State or Territory and station. Auburn Jan Birmingham do Calera Aug Carrollton July Do. do Dadeville do Dadeville do	1985 1986 1986 1985 1885 1885	23 3 5 28 10 23-24 23	In. 2.96 3.07 3.00 3.50 3.00 5.50 3.00	State or Territory and station. Arkansas—Cont'd Durham Do Do Fort Smith Do Do Do	April	1876 1876 1876 1881 1879 1879	13 27 1 18 23 24 8
ialian Springs ireville swood Cottage ear Clarksville). Do	April . Mar . Feb . Mar . April . Jan . Feb do . April . Aug . Jan . June . June do .	1984 1880 1874 1865 1877 1873 1875 1874 1874 1886 1886	10. 93 30. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 10. 03 12. 95 11. 80 14. 17 16. 38	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Mesquite New Uim Do	June July July July July Aug Feb May June June June Feb	1883 1884 1878 1882 1869 1869 1867 1867 1873 1881 1873 1881 1873 1878 1882 1882	19- 19 14- 10 10- 91 10- 51 12- 59 11- 30 12- 00 11- 62 13- 06 18- 11 21- 95 34- 85 15- 18 13- 99 10- 75 10- 60 10- 90	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Dadeville do Decatur. Mar	1885 1886 1886 1885 1885 1885	23 3 5 28 10 23-24 23 30	In. 2.96 3.07 3.00 3.50 3.50 5.50	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Fort Smith Do. Do. Do. Do.	April	1876 1876 1876 1881 1879 1879	13 27 1 18 23 24 8
alian Springs ireville	April . Mar . Feb . Mar . April . Jan . Feb do . April . April . Jan . April . Jan . Mar . Jen .	1984 1980 1974 1865 1877 1873 1875 1874 1885 1886 1886 1887 1870 1870 1870 1870 1874 1884	10-93 10-16 11-33 11-80 11-70 13-98 17-60 12-30 10-10 10-03 12-98 11-80 14-17 16-38 10-64 11-33	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Nesquite New Ulm Do	.do Junedo July . Julydo Julydo Aug Febdo Junedo Junedodo Junedo	1883 1884 1876 1869 1869 1867 1867 1887 1881 1873 1881 1873 1886 1882 1882 1883	19- 19 14- 10 10- 91 10- 51 12- 59 11- 30 11- 62 13- 66 18- 11 21- 95 34- 85 15- 18 13- 99 10- 75 10- 60 10- 90 12- 25 13- 10	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera Aug Carrollton Jun Do do Dadeville do Dadeville do Do Mar Do July Do do	1885 1886 1886 1886 1885 1885 1885 1885	23 3 5 28 10 23-24 23 30 30 28	In. 2.98 3.00 3.50 3.50 3.60 5.50 3.00 2.78 2.61 2.58	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Helons Do. Do. Do. Do.	April	1876 1876 1876 1881 1879 1879 1882 1883 1885	13 27 1 18 23 24 8 28 15
alian Springs ivood Cottage ear Clarksville). Do Do cland (Spring rden). Do	April Mar Fob Mar April Fob do April do April do Aug Jan Mar do Mar do Mar do	1984 1680 1874 1865 1877 1873 1875 1874 1887 1886 1889 1899 1870 1870 1870 1870 1884 1884 1888	10. 93 10. 16 11. 33 11. 80 11. 70 13. 91 17. 60 12. 30 10. 10 10. 03 12. 95 11. 80 14. 17. 16. 38 10. 64 11. 33 12. 18	Houston Do Jacksborough Do Laredo Levaca Lockhart Lone Point Melissa Do Do Do Do Mesquite New Uim Do Do Do Do	.dodododododododo	1883 1884 1878 1869 1869 1869 1867 1877 1881 1873 1881 1873 1881 1878 1882 1882 1882 1883 1884	19- 19 14- 10 10- 91 10- 51 12- 59 11- 30 11- 62 13- 66 18- 11 21- 95 34- 85 15- 18 13- 39 10- 75 10- 69 12- 25 13- 10 15- 20	Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville do Dadeville do Decatur. Mar Do. July Do. July Do. July Do. July Do. July Aug	1985 1986 1986 1986 1988 1885 1895 1995 1988 1988 1988	23 3 5 28 23-24 23 30 3 28 26	In. 2.96 3.07 3.50 3.50 3.50 3.50 2.78 2.61 2.58 2.90	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Fort Smith Do. Do. Helena Do. Do. Do. Do. Do. Do. Do. Do	April	1876 1876 1876 1881 1879 1879 1882 1885 1887	13 27 1 18 23 24 8 26 15 23 28
alian Springs ireville	April . Mar . Fob . Mer . April . Jan Fobdo . April . do . April . June . do . Mar . Fob . Junedo . May . Junedo . May . Jan .	1984 1880 1874 1865 1877 1873 1875 1874 1874 1885 1886 1887 1870 1870 1870 1878 1884 1884	10. 93 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 10. 10 10. 10 11. 80 14. 17 16. 38 11. 33 12. 18	Houston Do Jacksborough Do Laredo Levaca Lockhart Lone Point Melissa Do Do Do Do Mesquite New Uim Do Do Do Do	.dodododododododo	1883 1884 1878 1862 1869 1869 1867 1873 1881 1873 1878 1882 1882 1882 1882 1883 1864 1856	19- 19 14- 10 10- 91 10- 51 12- 59 11- 30 12- 00 11- 62 13- 66 18- 11 21- 93 34- 85 13- 18 13- 99 10- 75 10- 60 10- 90 12- 25 13- 10 15- 20 10- 00	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Dadeville do Decatur. Mar Do. July Do. do Demopolis Aug	1885 1886 1886 1886 1885 1885 1885 1886 1884 1884 1884	23 3 3 28 10 23–24 23 30 3 3 28 28 22	In. 2-98 3-97 3-50 3-50 3-50 3-50 3-51 2-58 2-51 2-58 2-59	State or Territory and station. Arkansas—Cont'd Durham Do Do Port Smith Do Do Do Helena Do	April	1876 1876 1876 1881 1879 1879 1879 1882 1885 1887 1882 1884	13 27 1 18 23 24 8 28 15
alian Springs ivood Cottage ear Clarksville). Do Do cland (Spring rden). Do	April Mar Fob April Jan Fob do April April Jan Mar Jan Mar Jan Mar Jan May Jan	1984 1680 1874 1865 1877 1873 1874 1877 1874 1885 1886 1885 1884 1884 1884 1884 1884 1884	10. 93 10. 16 11. 33 11. 80 11. 70 13. 96 10. 10 10. 03 12. 30 14. 17 16. 34 11. 30 14. 17 16. 34 11. 35 12. 18	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Mesquite New Ulm Do Do Do Do Do Sear Antonio	.do June June July Aug July do July do July do May do June do June Feb May do Jan Feb May do June Feb	1883 1884 1878 1879 1869 1867 1867 1877 1881 1873 1881 1873 1886 1882 1882 1882 1883 1884 1855	19- 19 14- 10 10- 91 10- 51 12- 59 11- 30 11- 62 13- 66 18- 11 21- 95 34- 85 15- 18 13- 39 10- 75 10- 69 12- 25 13- 10 15- 20	State or Territory and station. Alabama. Augurn Jan Birmingham do Calera. Aug Carrollton July Do. do Decatur. Mar Do. July Do. do Decatur. Mar Do. July Do. July Greensborough Jan Do. July Greensborough Jan Do. July	1885 1886 1886 1886 1885 1885 1885 1886 1886	23 3 3 28 10 23-24 23 30 3 28 26 22 2-3 27 37	In. 2.96 3.07 3.50 3.50 3.50 3.50 2.78 2.61 2.58 2.90	Arkansas—Cont'd Durham Do. Do. Fort Smith Do. Do. Bo. Do. Do. Do. Do. Do. Do. Do. Do. Do. D	April	1876 1876 1876 1881 1879 1879 1882 1885 1887 1882 1884 1874 1874	13 27 1 18 23 24 8 28 15 23 28 27 7 6
alian Springs ireville	April Mar Feb Mar April Jan Feb do April do April do April do Mar Jan Mar do Mar do Mar do Mar do Mar Jan Mar Jan Mar Jan Mar Jan Aug Jan Mar Jan Aug Jan Aug Jan Aug do	1884 1880 1874 1865 1877 1873 1875 1874 1885 1886 1886 1890 1872 1872 1878 1884 1884 1884 1884 1884	10. 92 70. 16 11. 33 11. 80 11. 70 13. 98 17. 60 13. 90 10. 10 10. 03 12. 90 11. 80 14. 17 16. 38 10. 43 11. 36 10. 47 12. 20 11. 30	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do	.dodododododododo	1883 1884 1878 1879 1869 1867 1867 1867 1881 1873 1881 1873 1886 1882 1882 1882 1883 1884 1856 1854 1854 1858 1854	19- 19 14- 10 10- 91 10- 91 10- 51 12- 59 11- 50 12- 50 11- 52 13- 66 18- 11 21- 95 34- 85 13- 99 10- 75 10- 90 10- 90 12- 25 13- 10 15- 30 10- 90 10- 96 10- 66 10- 66	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton Juli Clintonville Jan Do. do Dadeville Jo Do. Juli Do. Juli Do. Juli Greensborough. Jan Do. Juli Greensborough. Jan Greensborough. Jan Greensville Aug	1985 1986 1986 1986 1985 1985 1989 1984 1984 1986 1986 1986 1986 1986 1986 1986 1986	23 3 5 28 8 18 23-24 23 30 3 26 26 22 2-3 27 23	In. 2-96 3-97 3-50 3-50 3-50 3-61 2-58 2-61 2-58 2-90 3-15 6-77 2-98 3-44	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Helons Do. Do. Do. Do. Do. Do. Do. Do	April	1876 1876 1876 1881 1879 1882 1883 1885 1887 1884 1874 1874 1876	13 27 1 18 23 24 8 28 15 28 7 6 6 24
alian Springs invoid Cottage ear Clarksville). Do Do cland (Spring rden). Do	April Mar Mar April Jan Feb do April April Jan April do Mar June Mar June Jan May Jan Jan May Jan	1884 1886 1874 1865 1877 1875 1876 1877 1874 1886 1886 1884 1884 1884 1884 1884	10. 93 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 16. 10 16. 23 11. 80 14. 17 16. 41 11. 33 10. 64 11. 33 10. 64 11. 33	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Mesquite New Uim Do Do Do Do Do Ses Ses Ses Ses Ses Ses Antonio Do	.do June July Aug July Aug Aug Feb do June do June do June do June do June June June Bebt June Bebt Bebt Bully	1883 1884 1879 1869 1869 1867 1877 1881 1873 1881 1878 1880 1882 1882 1882 1883 1884 1854 1858 1858	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 11. 62 13. 66 18. 11 21. 95 34. 85 15. 18 13. 99 10. 75 10. 60 10. 90 12. 25 13. 10 15. 20 10. 96 10. 96 10. 96 10. 96 10. 96 10. 96 10. 66	Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Decatur Mar Do. July Do. do Demopolis Aug Evergreen July Greensborough Jan Do. July Greenville Aug	1885 1886 1886 1886 1885 1885 1887 1884 1886 1886 1886 1886 1886	23 3 3 5 28 10 23-24 23 30 30 26 22 2-3 27 23 31	In. 2-96 3-00 3-50 3-50 3-61 2-58 2-61 2-58 2-90 3-15 3-15 3-15	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Fort Smith Do. Do. Helena Do. Do. Do. Do. Do. Do. Do. Do	April do April do April do Jan do	1876 1876 1876 1886 1879 1879 1882 1882 1884 1874 1874 1878 1878	13 27 1 18 23 24 8 28 15 23 28 7 6 6 24 10
alian Springs iwood Cottage ear Clarksville). Do	April Mar	1884 1886 1874 1865 1877 1875 1876 1877 1874 1886 1886 1884 1884 1884 1884 1884	10. 92 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 10. 03 12. 18 14. 17 16. 38 17. 16 14. 17 16. 38 17. 16 16. 17 16. 38 17. 16 18. 18 19. 04 11. 33 12. 18 11. 33 12. 18 13. 30 14. 17 15. 35 16. 64 17. 35 18. 35 19. 35	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Mesquite New Ulm Do	.dodododododododo	1883 1884 1878 1879 1869 1867 1867 1867 1881 1873 1881 1873 1886 1882 1882 1882 1883 1884 1856 1854 1854 1858 1854	19- 19 14- 10- 91 10- 91 10- 51 12- 59 11- 30 11- 30 11- 30 11- 60 13- 60 10- 90 12- 25 13- 10 10- 9	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. July Greensborough. Jan Do. July Greenville Aug Lineville July Marion Jan Do. do	1885 1886 1886 1886 1885 1885 1885 1886 1886	23 3 3 5 28 10 23-24 23 3 3 28 26 22 2-3 7 23 1 1	In. 2-96 3-97 3-90 3-50 3-50 3-50 3-50 3-50 3-50 3-50 3-5	State or Territory and station. Arkansas—Cont'd Durham Do	April	1876 1876 1876 1881 1879 1879 1882 1882 1884 1874 1874 1876 1878	13 27 1 18 23 24 8 28 15 28 27 6 24 10 10 10 10 10 10 10 10 10 10 10 10 10
alian Springs ireville	April Mar Feb April April April do April do April do Aug Jan Mar Jan Mar Juno Mar Juno Mar Juno Mar Juno Juno Feb Juno Feb Juno Feb Juno	1884 1880 1874 1865 1877 1873 1875 1874 1874 1885 1886 1884 1884 1884 1884 1884 1884 1886 1884 1886 1886	10. 92 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 90 10. 10 10. 03 12. 95 11. 80 14. 17 16. 38 11. 36 11. 36 11. 36 11. 36 11. 36 10. 67 11. 36 10. 57 11. 38	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Mesquite New Ulm Do	.dodododododododo	1883 1884 1875 1869 1869 1869 1867 1881 1873 1873 1878 1882 1882 1882 1883 1854 1854 1855 1858 1858 1858 1858 1858	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 60 11. 62 13. 66 10. 90 10. 60 10. 60 10. 66 11. 60 10. 66 11. 60 10. 66 11. 60 10. 66 11. 60 10. 66 11. 60	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. July Greensborough. Jan Do. July Greenville Aug Lineville July Marion Jan Do. do	1885 1886 1886 1886 1885 1885 1885 1886 1886	23 3 3 5 28 20 23-24 23 30 30 26 26 22-3 27 23 24 25 25 26 26 26 27 27 28 28 28 28 28 28 28 28 28 28 28 28 28	In. 2: 96 3: 07 3: 00 3: 50 3: 00 3:	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Fort Smith Do. Do. Do. Helena Do.	April	1876 1876 1876 1881 1879 1879 1882 1885 1885 1884 1874 1876 1880 1882 1878 1878 1878	13 27 1 16 23 24 8 28 15 23 28 15 23 28 10 10 12
alian Springs ireville	April Mar Feb April Apri	1884 1880 1874 1865 1877 1873 1873 1874 1874 1874 1885 1886 1887 1884 1886 1884 1886 1884 1886 1884 1884	10. 92 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 13. 98 17. 60 10. 10 10. 10 10. 10 10. 10 11. 30 14. 17 16. 38 10. 47 12. 30 10. 47 12. 30 10. 47 12. 30 10. 57 10. 34 10. 57 10. 34	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do	.dodododododododo	1883 1884 1896 1899 1809 1809 1807 1867 1881 1873 1881 1878 1882 1882 1883 1898 1898 1898 1898 1898 1898 1898	19, 19 14, 10 10, 91 10, 51 12, 99 11, 30 12, 30 11, 62 13, 66 18, 11 21, 95 34-85 34-85 34-85 31, 10 10, 90 12, 25 13, 10 10, 90 12, 25 13, 10 10, 90 10, 46 17, 60 13, 66 17, 60 13, 66 17, 60 13, 66 17, 67 10, 75	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton Juli Clintonville Jan Do. do Dadeville do Decatur. Mar Do. July Do. do Demopolis Aug Evergreen July Greensborough. Jan Do. July Greensborough. Jan Do. July Marion Jan Do. July Marion Jan Do. July Mary Jan Mary	1886 1886 1886 1884 1885 1885 1886 1886 	23 3 3 3 16 22 2-3 27 23 3 1 1 5 3-3 3 1 1 1 5	In. 2.96 3.07 3.00 3.50 3.00 5.50 3.00 2.78 2.61 2.58 2.90 3.15 5.77 2.98 4.250 3.50 3.50 3.50 3.50 3.50 3.50 3.50 3.	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Do. Do. Do. Do. Do. Do	April	1876 1876 1876 1881 1879 1879 1882 1885 1887 1885 1884 1874 1876 1878 1880 1882 1874 1874	13 27 18 23 24 28 15 23 28 7 6 24 10 10 12 9 15 15 19
alian Springs ireville	April Mar Feb April	1884 1880 1874 1805 1873 1875 1873 1874 1885 1887 1886 1884 1884 1884 1884 1884 1884 1884	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 10. 03 12. 95 11. 80 14. 17 16. 38 10. 47 12. 10 16. 87 11. 35 10. 57 10. 57 10. 34 10. 11. 34 10. 11. 34 10. 12. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do	.dodododododododo	1883 1884 1875 1869 1869 1869 1867 1881 1873 1873 1878 1882 1882 1882 1883 1854 1854 1855 1858 1858 1858 1858 1858	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 60 11. 62 13. 66 10. 90 10. 60 10. 60 10. 66 11. 60 10. 66 11. 60 10. 66 11. 60 10. 66 11. 60 10. 66 11. 60	State or Territory and station. Alabama. Augurn Jan Birmingham do Calera. Aug Carrollton Juli Do. do Decatur Mar Do. Juli Do. do Demopolis Aug Evergreen Juli Greensborough Jan Do. Juli Greensille Juli Greenville Aug Lineville Juli Marion Jan Do. July Marion Jan Do. July Mary Augurn Jan Do. July Mt. Vernon Ars' Jan Do. do	1885 1886 1886 1886 1885 1885 1885 1885	23 3 5 28 23-24 23 30 3 28 26 22 2-3 3 3 5 5 26 23 3 3 3 28 3 3 3 2 6 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	In. 2.96 3.07 3.00 3.50 3.50 3.58 2.58 2.59 3.35 3.50 3.50 3.50 3.50 3.50 3.50 3.50	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Fort Smith Do. Do. Do. Helena Do.	April	1876 1876 1876 1881 1879 1879 1882 1885 1885 1884 1874 1876 1880 1882 1878 1878 1878	13 27 18 23 24 8 8 8 15 23 28 7 7 6 24 10 10 10 11 19 15 19 19 19 19 19 19 19 19 19 19 19 19 19
alian Springs streville st	April Mar Feb April April April April do Aug Jan Feb Jan Mar Feb June do Mar do Mar June do Mar June do Mar June do Feb Jan Feb Feb Jan Feb Feb Jan Feb Feb Jan Feb Fe	1884 1865 1874 1865 1873 1873 1873 1874 1886 1887 1886 1884 1884 1884 1884 1884 1884 1886 1884 1886 1886	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 10. 03 12. 95 11. 80 14. 17 16. 38 10. 47 11. 33 12. 16 11. 35 10. 57 10. 41 11. 35 10. 42 11. 35 10. 42 10. 42 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Do Do Mesquite New Ulm Do Sour Lake Union Hill Waco Verwoont Castleton	.dodododododododo	1884 1884 1876 1876 1869 1869 1869 1867 1873 1873 1873 1878 1882 1882 1882 1882 1883 1854 1854 1854 1854 1854 1854 1854 1854	19, 19 14, 10 10, 91 10, 51 12, 99 11, 30 12, 30 11, 62 13, 66 18, 11 21, 95 34-85 34-85 34-85 31, 10 10, 90 12, 25 13, 10 10, 90 12, 25 13, 10 10, 90 10, 46 17, 60 13, 66 17, 60 13, 66 17, 60 13, 66 17, 67 10, 75	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do do July Do do Decatur Mar Do July Do do Demopolis Aug Evergreen July Greensborough Jan Do July Marion Jan Do July Mount View Jan	1885 1886 1886 1886 1885 1885 1885 1886 1886	23 3 5 28 10 23-24 23 33 3 28 26 22 2-3 37 23 31 1 5 5 26 22 2-3 3 3 3 28 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	## EW ## ## ## ## ## ## ## ## ## ## ## ## #	State or Territory and station. Arkansas—Cont'd Durham	April	1876 1876 1876 1881 1879 1887 1885 1887 1884 1874 1876 1878 1880 1882 1874 1877 1877 1877	13 27 1 18 24 8 28 28 28 27 6 24 10 12 19 15 18 22 22 22 22 23 28 24 26 24 26 24 26 26 26 27 27 27 27 27 27 27 27 27 27 27 27 27
alian Springs ireville	April Mar Feb Mar April April do April do Mar Mar Mar do Mag do Mag do Mag do Mag Jan Mar Juno Aug Mar Juno Aug Mar Juno Feb Juno Feb Juno Feb Juno Feb Juno Feb Juno Feb Juno Full July Juno Full July Juno Juno Full July Juno Full July Juno Full July Juno Full July Juno Juno Full July Juno J	1884 1865 1874 1865 1873 1873 1873 1873 1877 1874 1865 1867 1866 1869 1884 1884 1884 1884 1884 1884 1884 188	10. 92 10. 16 11. 33 11. 80 11. 70 13. 98 17. 50 12. 30 10. 10 10. 03 11. 80 14. 17 16. 38 11. 33 12. 18 11. 33 12. 18 10. 64 11. 33 10. 67 12. 30 10. 11. 10. 10. 10. 10. 10. 10. 10. 10.	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Do Do Do Do Mesquite New Uim Do	.dodododododododo	1884 1884 1876 1879 1869 1869 1869 1867 1877 1881 1873 1881 1873 1882 1882 1882 1883 1884 1854 1858 1858 1858 1858 1858 1858	19, 19 14, 10 10, 91 10, 51 12, 99 11, 30 12, 59 11, 30 12, 65 18, 11 21, 95 34, 85 15, 18 13, 99 10, 75 10, 69 12, 25 13, 10 10, 90 10, 96 10, 66 11, 69 10, 66 11, 69 10, 65 11, 49 10, 60 10, 75 10, 65	State or Territory and station. Alabama. Augura Augura Birminghamdo Calera	1886 1886 1886 1886 1885 1885 1885 1885	23 5 28 28 23-24 23 30 26 26 22 2-3 27 23 1 1 1 1 6 3 3 3 3 3 8 2 8 2 8 8 2 8 8 8 8 8 8 8 8	2.96 3.90 3.50 3.50 3.50 3.50 3.50 3.50 3.50 3.5	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Do. Do. Do. Do. Do. Do	Aprildo May Feb April do April do	1876 1876 1876 1881 1879 1879 1882 1885 1885 1884 1874 1876 1880 1874 1874 1874 1874 1877 1878	133 27 1 186 233 244 8 8 28 15 23 28 10 12 15 19 15 19 22 23 28 21 21
alian Springs ireville	April Mar April April April April April do Aug Jan Feb do Mar Feb do Mar Juno do Mar Juno Aug Juno Aug Juno Aug Juno Aug Juno Aug Juno Aug Mar Juno Feb Juno Feb Juno Feb Juno Feb Feb Feb Feb Juno Feb	1884 1880 1877 1873 1875 1875 1875 1876 1877 1874 1877 1876 1877 1876 1884 1884 1884 1884 1884 1884 1884 188	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 12. 30 14. 17 16. 38 11. 30 14. 17 12. 30 16. 10 17. 57 10. 47 11. 33 10. 57 10. 57 10. 30 11. 31 10. 57 10. 30 11. 31 10. 30 11. 31 10. 30 10. 30 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Do Do Do Do Mesquite New UIM Do	.do	1883, 1884, 1878, 1889, 1879, 1869, 1879, 1869, 1879, 1869, 1873, 1881, 1873, 1881, 1873, 1873, 1874, 1882, 1883, 1854, 1855,	19. 19 14. 10 10. 91 10. 51 12. 99 11. 30 12. 99 11. 30 12. 90 12. 90 12. 90 13. 15 13. 19 10. 75 10. 60 10. 96 10. 60 10. 60 11	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Dadeville do Decatur Mar Do. July Do. do Demopolis Aug Evergreen July Greensborough. Jan Do. July Marion Jan Do. July Marion Jan Do. July Marion Jan Do. Aug Mont View Jan Do. Aug Mount View Jan Do. do Newion do	1886 1886 1886 1886 1885 1885 1886 1886 	23 3 5 28 10 23-24 23 30 3 28 26 22 2-3 31 15 5 3-3 26 27 23 31 16 31 31 31 31 31 31 31 31 31 31 31 31 31	## ## ## ## ## ## ## ## ## ## ## ## ##	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Do. Do. Do. Do. Do. Do	Aprildo May Feb April do April do April do	1876 1876 1876 1879 1879 1879 1882 1885 1884 1876 1876 1878 1874 1877 1872 1874 1877 1876 1872 1874	133 27 1 1 188 234 8 8 288 28 15 129 110 12 22 28 22 110 110 110 110 110 110 110 110 110
alian Springs isreville	April Mar Feb April Apri	1884 1865 1874 1865 1873 1873 1873 1874 1886 1887 1886 1884 1884 1884 1884 1884 1884 1886 1884 1886 1886	10. 92 10. 16 11. 33 11. 80 11. 70 13. 98 17. 50 12. 30 10. 10 10. 03 11. 80 14. 17 16. 38 11. 33 12. 18 11. 33 12. 18 10. 64 11. 33 10. 67 12. 30 10. 11. 10. 10. 10. 10. 10. 10. 10. 10.	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do	.dodododododododo	1884 1884 1876 1879 1869 1869 1869 1867 1877 1881 1873 1881 1873 1882 1882 1882 1883 1884 1854 1858 1858 1858 1858 1858 1858	19, 19 14, 10 10, 91 10, 51 12, 99 11, 30 12, 59 11, 30 12, 65 18, 11 21, 95 34, 85 15, 18 13, 99 10, 75 10, 69 12, 25 13, 10 10, 90 10, 96 10, 66 11, 69 10, 66 11, 69 10, 65 11, 49 10, 60 10, 75 10, 65	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. August Garrollton Julij Clintonville Jan Do do Decatur Mar Do July Do do Decatur Mar Do July Greensborough Jan Do July Greensborough Jan Do July Greensborough Jan Do July Marion Jan Do Jan Do Aug Mourille July Marion Jan Do do Decatur Jan Do do Decatur Aug Mount View Jan Do Au	1886 1886 1886 1886 1885 1885 1885 1886 1886	23 3 5 28 28 23-24 23 30 3 28 26 26 22-3 3 1 1 3 3 3 2 8 8 26 26 27 27 27 27 27 27 27 27 27 27 27 27 27	## ## ## ## ## ## ## ## ## ## ## ## ##	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Do. Do. Do. Do. Do. Do	April	1876 1876 1876 1881 1879 1879 1882 1885 1885 1884 1874 1876 1880 1874 1874 1874 1874 1877 1878	133 27 1 186 233 244 8 8 28 15 23 28 10 12 15 19 15 19 22 23 28 21 21
salian Springs treville nwood Cottage ear Clarksville). Do don	April Mar April Mar April Mar April do April do Aug Jan Mar April do Mar do Mar do Mar June do Mar June do Feb June do Feb June do Feb April June April June April do April do April do April do do April do	1584 1580 1573 1573 1573 1573 1574 1574 1574 1574 1574 1576 1576 1576 1576 1576 1576 1576 1576	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 95 10. 10 10. 03 12. 95 11. 80 14. 17 16. 38 11. 30 12. 18 11. 30 10. 47 12. 20 16. 87 11. 35 10. 41 11. 35 10. 42 11. 35 10. 41 11. 35 10. 42 11. 35 10. 41 11. 35 10. 41 10. 41 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Mesquite New Ulm Do Do Do Do Do Vin Oak Ringgold Harracks San Antonio Do Sour Lake Union Hill Waco Webberville Yorktown Ferrisburg Casileson Ferrisburg Lunenburg' Randolph Strafford	.dodododododododo	1883, 1894, 1895, 1892, 1893,	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 00 11. 62 13. 66 18. 11 21. 95 34. 85 15. 18 13. 99 10. 75 10. 60 10. 96 11. 62 11. 60 10. 96 11. 60 10. 96 11. 60 10. 96 11. 60 10. 96 11. 60 10. 65 11. 47 14. 05 12. 47 14. 05 12. 20	State or Territory and station. Alabama. Augurn Jan Birmingham do Calera. Aug Carrollton July Do. do Decatur Mar Do. July Do. do Demopolis Aug Evergreen July Greensborough. Jan Do. July Marion Jan Do. July Marion Jan Do. do Do. Aug Do. Aug Pattatvillo Jan State Line July State Line	1885 1886 1886 1886 1885 1885 1885 1885	23 5 5 8 10 23-24 23 30 32 28 26 22 2-3 27 23 16 16 3 30-37 8 8 8 8 8 8 9 10 10 10 10 10 10 10 10 10 10 10 10 10	### ### ##############################	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith. Do. Do. Helena Do.	April	1876 1876 1876 1879 1879 1889 1889 1887 1884 1874 1874 1874 1874 1874 1874	133 27 1 1 188 24 4 5 28 15 5 23 32 4 10 11 2 1 15 15 15 15 15 15 15 15 15 15 15 15 1
talian Springs treville nwood Cottage near Clarksville). Do Bo	April Mar Feb Mar April Mar April do April do Mag Jan Mar do Mag Jan Mar do Mag Jan Mar do Mag Jan Mar Juno Mag Mar Juno Mar Juno Feb Jan Feb April June Feb April do Feb Mar April do Feb Mar April do April do April do April do Mar April do do April do do April do do do April do	1884 1870 1877 1873 1873 1874 1874 1874 1874 1874 1874 1874 1875 1884 1884 1884 1884 1884 1884 1884 188	10. 92 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 10. 03 11. 80 14. 17 16. 38 11. 33 12. 18 11. 33 11. 18 11. 33 11. 34 10. 47 12. 30 10. 34 10. 34 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Mesquite New Ulm Do Do Do Do Do Vin Oak Ringgold Harracks San Antonio Do Sour Lake Union Hill Waco Webberville Yorktown Ferrisburg Casileson Ferrisburg Lunenburg' Randolph Strafford	.dodododododododo	1883, 1878, 1884, 1878, 1884, 1878, 1884, 1879, 1869, 1867, 1873, 1881, 1873, 1881, 1873, 1882, 1882, 1893, 1894, 1893, 1894, 1895, 1895, 1897, 1897, 1898, 1872, 1899, 1872, 1898, 1872,	19. 19 14. 10 10. 91 10. 51 12. 99 11. 30 12. 69 11. 62 13. 66 18. 11 21. 95 34. 85 15. 18 13. 99 10. 75 10. 69 12. 35 13. 10 10. 90 12. 35 13. 10 15. 30 10. 98 10. 66 11. 99 10. 66 11. 99 10. 65 11. 99 10. 65 12. 58 12. 58 10. 65	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Deadeville do Decatur. Mar Do. July Greensborough. Jan Do. July Greensborough. Jan Do. July Greensborough. Jan Do. July Greensborough. Jan Do. July Greenville Aug Linuville July Marion Jan Do. July Marion Jan Do. do Do. July Mt. Vernon Ars'l Jan Do. do Do. Aug Mount View Jan Do. do Do. Aug Mount View Jan So. do Newton do Do. Aug Prattaville Jan State Line July Tugecalooss Jan State Line July	1886 1886 1886 1886 1885 1885 1885 1886 1886	23 3 3 28 28 23-24 23 30 3 3 26 26 2-3 27 23 31 1 1 3 3 26 26 2-3 27 23 3 1 1 20 3 20 3 20 3 20 3 20 3 20 3	# W	State or Territory and station. Arkansas—Cont'd Durham Do	April	1876 1876 1876 1879 1879 1882 1879 1882 1882 1884 1874 1876 1886 1874 1877 1876 1886 1874 1877 1876 1886 1886 1887 1877 1877 1877	13327 1188224 23324 24828 28828 2776 24429 10122 10222 27223 28821 10222 28821 10222 1022
talian Springs tarville	April Mar Feb April April April do Aug Jan Feb do Mar Aug Jan Mar do Mar do Mar do Mar June do Mar June do Feb June do Feb June do Feb June Feb June Feb June Feb June Feb June Feb Mar do Mar do	1584 1580 1573 1573 1573 1573 1574 1574 1574 1574 1574 1576 1576 1576 1576 1576 1576 1576 1576	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 10. 03 12. 95 11. 80 14. 17 16. 38 11. 30 14. 17 16. 38 10. 57 12. 18 10. 47 11. 33 10. 57 10. 11 14. 55 10. 34 10. 11 14. 55 10. 36 11. 37 10. 57 10. 11 14. 55 10. 38 10. 11 14. 55 10. 38 10. 11 14. 55 10. 38 10. 11 14. 55 10. 38 10. 11 14. 55 10. 38 10. 11 14. 55 10. 38 10. 11 14. 55 10. 38 10. 11 14. 55 10. 38 10. 11 14. 55 10. 38 10. 11 11. 38 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Do Do Do Do Mesquite New UIM Do Do Do Do Do Do Do Do Lavaca Lockhart Lone Point Melissa Do	.dodododododododo	1883, 1894, 1895, 1892, 1893,	19, 19 14, 10 10, 91 10, 51 12, 99 11, 30 12, 30 11, 62 13, 66 18, 11 21, 95 34, 85 34, 85 15, 18 13, 95 10, 75 10, 60 11	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Carrollton July Do do Decatur Mar Do. July Do July Do July Greensborough Jan Do. July Marion July Marion Jan Do do Do do Do do Do do Do July Marion Jan Do do Do do Do Aug Freenville July Marion Jan Do do Do Aug Mount View Jan Do do Do Aug Mount View Jan Do do Do do Do Aug Mount View Jan Do	1886 1886 1886 1886 1885 1885 1885 1886 1886	23 3 3 28 28 23-24 23 30 3 3 26 26 2-3 27 23 31 1 1 3 3 26 26 2-3 27 23 3 1 1 20 3 20 3 20 3 20 3 20 3 20 3	### ### ##############################	State or Territory and station. Arkansas—Cont'd Durham	April	1876 1876 1876 1879 1879 1889 1889 1887 1884 1874 1874 1874 1874 1874 1874	133 27 1 1 188 24 4 5 28 15 5 23 32 4 10 11 2 1 15 15 15 15 15 15 15 15 15 15 15 15 1
talian Springs tareville nwood Cottage near Clarksville). Do ton sabethion Do torias	April Mar April Ap	1884 1880 1877 1873 1875 1877 1873 1875 1877 1876 1886 1886 1886 1886 1886 1886	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 12. 30 14. 17 16. 38 11. 80 14. 17 16. 38 10. 47 12. 30 16. 87 12. 18 10. 47 12. 30 16. 87 11. 33 10. 57 11. 30 10. 57 11. 30 11. 31 10. 57 10. 57 11. 31 10. 57 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do	.do .do .June .do .July .AugJuly .AugJuly .AugJuly .AugJulydododododododod	1883, 1894, 1897, 1869, 1893, 1894, 1895, 1895, 1895, 1895, 1897, 1897, 1897, 1898, 1898, 1898, 1898, 1898, 1898, 1898, 1899, 1891, 1891,	19, 19 14, 10 10, 91 10, 51 12, 99 11, 30 12, 30 11, 62 13, 66 18, 11 21, 95 34, 85 34, 85 34, 85 36, 10 10, 90 12, 25 13, 10 10, 90 12, 25 13, 10 10, 90 10, 46 17, 60 11	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Augarnolton Julion Julion Julion Julion Julion Julion Julion Jan Do. do Dadeville do Obenatur Mar Do. Julion Julion Julion Jan Do. Julion Julion Jan Do. do Demonille Julion Julion Jan Do. Julion Jan Do. do Do. Julion Jan Do. do Do. Julion Jan Do. do Do. Julion Jan Do. Aug Mount View Jan Do. Aug	1886 1886 1886 1886 1885 1885 1885 1885	23 55 28 28 23-24 23 30 26 26 27-23 11 16 29-33 30 31 31 30 37-24 23 30 30 30 30 30 30 30 30 30 3	## 2.96 3.07 3.50 3.50 3.50 3.50 3.50 3.50 3.50 3.50	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Do. Do. Do. Do. Do. Do	April	1876 1876 1876 1881 1879 1879 1879 1882 1884 1874 1876 1874 1874 1876 1882 1884 1877 1874 1877 1874 1877 1877 1877	133 277 118 233 244 28 28 28 28 20 100 12 21 100 22 28 28 21 100 22 28 8 9 9 14 11 11 8 8 9 9 14 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18
talian Springs tareville nwood Cottage near Clarksville). Do .	April Mar Feb Mar April Mar April Mar April Mar Mar Mar Mar Mar Juno	1884 1880 1877 1873 1875 1875 1876 1874 1874 1874 1884 1884 1884 1884 1884	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 13. 98 10. 10 10. 03 12. 95 11. 80 14. 17 16. 38 10. 47 11. 33 12. 18 11. 36 10. 47 11. 33 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 16. 73 10. 11 17. 34 10. 11 18. 80 11. 80 11. 80 11. 80 11. 80 11. 80	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Do Mesquite New Uim Do Do Do Pin Oak Ringgold Harracks San Antonio Do Sour Lake Union Hill Waco Webberville Yorktown Varses Lunenburg Randolph Strafford Firginia Blacksburg Capecharice Li. H'se Do Clarksburgh	.dodododododododo	1883, 1878, 1884, 1873,	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 30 11. 62 13. 66 18. 11 21. 95 34. 85 15. 18 13. 99 10. 75 10. 60 10. 96 10. 90 10	State or Territory and station. Alabama. Augurn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Decatur Mar Do. July Do. July Greensborough Jan Do. do Do. July Marion Jan Do. do Do. July Marion Jan Do. do Do. Aug Mount View Jan Do. do Do. Aug State Line July Tuscaloosa Jan Do. do Do. Aug Prattavillo Jan State Line July Tuscaloosa Jan Do. July Do. do Do. July Ob. July Do. do Do. July Company State Line July Do. do Do. do Do. July Do. do Do. do Do. July Do. do	1985 1986 1986 1986 1986 1988 1988 1988 1988	23 55 28 10 23-24 23 30 32 28 26 22 2-3 31 16 33 36-27 8 8 18 18 19 39-30 3 32 6 26 27 28 28 26 26 27 27 28 28 28 26 26 26 26 26 26 27 27 28 28 28 28 28 28 28 28 28 28 28 28 28	### ### ##############################	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do.	April	1876 1876 1876 1871 1879 1879 1879 1878 1882 1884 1874 1874 1877 1876 1882 1884 1877 1877 1877 1877 1877 1877 1877	13 27 1 1 1 23 24 8 26 23 26 24 1 23 26 24 1 23 26 21 21 22 22 23 22 24 24 24 24 24 24 24 24 24 24 24 24
talfan Springs	April Mar April Ap	1884 1880 1877 1873 1875 1877 1873 1875 1877 1876 1886 1886 1886 1886 1886 1886	10. 92 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 10. 03 11. 80 14. 17 16. 38 11. 33 12. 18 11. 33 12. 18 11. 33 12. 18 11. 33 12. 18 11. 33 10. 47 12. 30 16. 87 11. 33 10. 34 10. 34 10. 34 10. 55 10. 34 10. 75 11. 33 11. 10. 12. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do	.do June do July Aug do July Aug Feb do	1883, 1874 1874 1874 1874 1874 1875 1869 1875 1875 1875 1875 1875 1875 1875 1875	19, 19 14, 10 10, 91 10, 51 12, 99 11, 30 12, 62 13, 66 18, 11 21, 95 34, 80 10, 66 11, 29 10, 65 12, 36 10, 65 12, 36 10, 67 12, 23 11, 90 13, 56 13, 50 13, 10 10, 67 12, 23 11, 90 13, 56 13, 59 13, 59 13, 59 10, 67 10, 67	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Deadeville do Decatur Mar Do. July Greensborough Jan Bo. July Greensborough Jan Hober Jan Marion Jan Do. July Marion Jan Do. do Do. July Marion Jan Do. do Do. July Teenswille July Marion Jan Do. do Do. July Tuscaloosa Jan Do. do Newton do Do. Aug Prattsvillo Jan State Line July Tuscaloosa Jan Do. do Do. July Oo. do Do. July	1886 1886 1886 1886 1886 1885 1886 1886	23 55 28 10 23-24 23 30 32 28 26 22 2-3 31 16 33 36-27 8 8 18 18 19 39-30 3 32 6 26 27 28 28 26 26 27 27 28 28 28 26 26 26 26 26 26 27 27 28 28 28 28 28 28 28 28 28 28 28 28 28	4 m. 2.96 3.07 3.50 3.50 3.50 3.50 3.50 3.50 3.50 3.50	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do.	Aprildo	1876 1876 1876 1881 1879 1879 1879 1882 1884 1874 1876 1874 1876 1877 1877 1877 1877 1877 1877 1877	133 277 118 233 244 24 21 21 21 21 21 21 21 21 21 21 21 21 21
statian springs streville	April Mar Feb April Apri	1884 1870 1873 1873 1873 1874 1874 1874 1874 1874 1874 1885 1884 1884 1884 1884 1873 1873 1873 1873 1873 1873 1873 1873	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 13. 98 10. 10 10. 03 12. 95 11. 80 14. 17 16. 38 10. 47 11. 33 12. 18 11. 36 10. 47 11. 33 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 14. 55 10. 34 10. 11 16. 73 10. 11 17. 34 10. 11 18. 80 11. 80 11. 80 11. 80 11. 80 11. 80	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Do Do Mesquite New Uim Do Do Do Pin Oak Ringgold Barracks San Antonio Do Sour Lake Union Hill Waco Webberville Yorklown Ferrisburg Lunenburg Randolph Strafford Firginia Blacksburg Cape Chartes Lt. H'se Do Clarksburgh Cottage Home Cottage Home Creighton's Store	.dodododododododo	1883, 1878, 1884, 1873,	19. 19 14. 10 10. 91 10. 51 12. 59 11. 30 12. 30 11. 62 13. 66 18. 11 21. 95 34. 85 15. 18 13. 99 10. 75 10. 60 10. 96 10. 90 10	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Deadeville do Decatur Mar Do. July Greensborough Jan Do. July Marion Jan Do. July Marion Jan Do. do Do. July Marion Jan Do. do Do. July Mt. Vernon Ars'l Do. do Do. Aug Mount View Jan Do. do Newton do Do. Aug Prattaville Jan State Line July Tuscalooss Jan Do. do Do. July Do. do Do. do Do. July Do. do Do. July Do. do Do. July Do. do	1886 1886 1886 1886 1885 1885 1885 1886 1886	23 3 3 28 28 23-24 23 30 3 3 26 22 2-3 27 23 3 1 1 5 2-3 8 17 30 32 8 17 30 32 8 17 30 31 16 16 16 16 16 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	### ### ##############################	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Do. Do. Do. Do. Do. Do	April	1876 1876 1876 1871 1879 1879 1879 1878 1882 1884 1874 1874 1877 1876 1882 1884 1877 1877 1877 1877 1877 1877 1877	133 277 118 234 244 221 100 22 24 11 11 18 22 24 24 10 10 12 22 24 11 10 22 24 14 15 16 8
stalian Springs streville mwood Cottage near Clarksville). Do sabethion Do storia sap Cove enville Do Do Do say Cove say Co	April Mar Feb Mar April Mar April do April do Mar April do Mar do Mar do Mar do Mar do Mar do Feb June do Feb June do Feb Mar do feb feb Mar do feb fe	1884 1870 1873 1873 1873 1874 1874 1874 1874 1874 1874 1885 1884 1884 1884 1884 1873 1873 1873 1873 1873 1873 1873 1873	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 12. 30 14. 17 16. 38 11. 80 14. 17 16. 38 10. 67 11. 30 16. 87 11. 30 16. 87 11. 30 16. 87 11. 30 16. 87 11. 30 16. 87 11. 30 16. 87 11. 30 10. 53 11. 30 10. 53 13. 00 10. 63	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do	.do .do .do .do .do .July .do	1883, 1884, 1893, 1884, 1893, 1884, 1893, 1869, 1869, 1869, 1869, 1869, 1869, 1869, 1869, 1873, 1869, 1873, 1869, 1873, 1869, 1873, 1869, 1871, 1871,	19. 19 14. 10 10. 91 10. 51 12. 99 11. 30 12. 09 11. 62 13. 66 18. 11 21. 95 34-85 34-85 34-85 15. 18 13. 99 12. 25 13. 10 15. 20 10. 96 10. 60 11. 6	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton Julij Clintonville Jan Do. do Dadeville do Calera. Mar Do. July Do. do Decatur Mar Do. July Greensborough Jan Greensborough Jan Greensborough Jan Do. July Marion Jan Do. do Do. July Marion Jan Do. do Do. July Marion Jan Do. do Do. July Tuscaloosa Jan Tuscaloosa Jan State Line July Tuscaloosa Jan Do. do Do. Aug Tuscaloosa Jan Do. do Do. Aug Newton do Do. July Tuscaloosa Jan Do. do Do. Aug Tuscaloosa Jan Do. do Union Springs Jan Uniontown Aug Valley Head	1886 1886 1886 1886 1885 1885 1885 1886 1886	23 3 3 28 28 23-24 23 30 3 3 26 22 2-3 27 23 1 1 5 8-3 3 1 16 3 2 2 2 2 3 3 3 1 1 5 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	### ### ##############################	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Do. Do. Do. Do. Do. Do	April	1876 1876 1876 1881 1879 1879 1879 1882 1884 1884 1874 1876 1877 1877 1877 1877 1877 1877 1877	133 277 118 234 24 24 25 25 25 25 25 25 25 25 25 25 25 25 25
talian Springs tareville nwood Cottage nwood Cottage nwood Cottage nwood Cottage nwood Cottage nwood no	April Mar Feb Mar April Mar April Mar April Mar Mar do Mar do Mar Juno Mar Juno Juno Juno Mar Juno Juno Juno April do Feb April do Mar do Mar do Mar do Mar do April do Mar do Mar July Feb Mar July Feb Mar July Juno Mar do Mar July July July July July do	1884 1880 1877 1875 1877 1875 1877 1875 1874 1875 1874 1876 1877 1874 1876 1877 1878 1878 1878 1878 1878 1878	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 13. 98 17. 60 13. 95 11. 80 14. 17 16. 38 14. 17 16. 38 11. 30 16. 87 11. 33 10. 57 10. 34 10. 11 14. 55 10. 47 11. 33 10. 11 14. 55 10. 61 10. 75 11. 13 10. 11 17. 38 10. 11 17. 38 10. 11 17. 38 10. 11 17. 38 10. 11 17. 38 10. 11 17. 38 10. 11 18. 80 11	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do Do Do Do Do Do Do Mesquite New Uim Do Do Do Pin Oak Ringgold Barracks San Antonio Do Sour Lake Union Hill Waco Webberville Yorktown Ferrisburg Lunenburg Randolph Strafford Firginia Blacksburg Castleton Firginia Blacksburg Cape Charles Li. H'se Do Clarksburgh Cottage Home Creighton's Store Dale Enterprise Falmouth Fort Monroe	.dodododododododo	1883, 1876 1889, 1879 1869, 1879, 1869, 1879, 1869, 1877, 1881, 1873, 1881, 1873, 1884, 1873, 1884, 1873, 1884, 1873, 1884, 1873, 1884, 1874, 1886, 1879, 1870, 18	19, 19 14, 10 10, 91 10, 51 12, 99 11, 30 12, 69 11, 62 13, 66 18, 11 21, 95 34, 85 15, 18 13, 99 10, 75 10, 69 12, 25 13, 10 10, 90 12, 25 13, 10 10, 90 10, 98 10, 66 11, 99 10, 66 11, 99 10, 67 11, 49 11, 60 12, 23 11, 40 12, 23 11, 40 11, 46 11, 67 11, 68 12, 72 11, 46 11, 68 12, 72 12, 72 12	State or Territory and station. Alabama. Augurn Jan Birmingham do Calera. Aug Carrollton July Clintonville Jan Do. do Decatur Mar Do. July Greensborough Jan Do. July Greensborough Jan Do. July Greensborough Jan Do. July Marion Jan Do. July Marion Jan Do. July Marion Jan Do. do Do. July Mult Vernon Ars' Jan Do. do Do. July Mount View Jan Do. do Do. Aug Prastavillo Jan State Line July Tuscaloosa Jan Do. do Do. July Tuscaloosa Jan Do. do	1986 1986 1986 1986 1986 1985 1985 1986 1986 1986 1986 1986 1986 1986 1986	23 3 5 28 28 23-24 23 30 28 26 22 2-3 1 1 5 2-3 23 1 1 6 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9	4 M. 6. 2. 96 3. 50 3. 5	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Port Smith Do. Do. Do. Helena Do.	April do May Feb April do May Feb do	1876 1876 1876 1879 1879 1879 1879 1882 1884 1874 1874 1877 1877 1876 1882 1884 1877 1877 1877 1877 1877 1878 1883 1884 1878 1883 1883 1884 1878 1883 1884 1877 1878 1885	133 277 118 233 244 251 25 25 25 25 25 25 25 25 25 25 25 25 25
talian Springs treville nwood Cottage treville Do Leon Leon Loriek Lorie	April Mar April Ap	1884 1870 1873 1873 1873 1874 1874 1874 1874 1874 1874 1885 1884 1884 1884 1884 1873 1873 1873 1873 1873 1873 1873 1873	10. 99 10. 16 11. 33 11. 80 11. 70 13. 98 17. 60 12. 30 10. 10 12. 30 14. 17 16. 38 11. 80 14. 17 16. 38 10. 67 11. 30 16. 87 11. 30 16. 87 11. 30 16. 87 11. 30 16. 87 11. 30 16. 87 11. 30 16. 87 11. 30 10. 53 11. 30 10. 53 13. 00 10. 63	Houston Do Jacksborough Do Laredo Lavaca Lockhart Lone Point Melissa Do	.dodododododododulydododododododod	1883, 1884, 1893, 1884, 1893, 1884, 1893, 1869, 1869, 1869, 1869, 1869, 1869, 1869, 1869, 1873, 1869, 1873, 1869, 1873, 1869, 1873, 1869, 1871, 1871,	19. 19 14. 10 10. 91 10. 51 12. 99 11. 30 12. 09 11. 62 13. 66 18. 11 21. 95 34-85 34-85 34-85 15. 18 13. 99 12. 25 13. 10 15. 20 10. 96 10. 60 11. 6	State or Territory and station. Alabama. Auburn Jan Birmingham do Calera. Aug Carrollton Julij Clintonville Jan Do. do Dadeville do Calera. Mar Do. July Do. do Decatur Mar Do. July Greensborough Jan Greensborough Jan Greensborough Jan Do. July Marion Jan Do. do Do. July Marion Jan Do. do Do. July Marion Jan Do. do Do. July Tuscaloosa Jan Tuscaloosa Jan State Line July Tuscaloosa Jan Do. do Do. Aug Tuscaloosa Jan Do. do Do. Aug Newton do Do. July Tuscaloosa Jan Do. do Do. Aug Tuscaloosa Jan Do. do Union Springs Jan Uniontown Aug Valley Head	1986 1986 1986 1986 1986 1986 1986 1986	23 3 5 28 28 23 24 23 30 38 26 22 2-3 1 1 5 2-3 23 1 1 6 3 3 3 3 1 1 6 3 3 1 1 6 3 1 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	4 m. 2.96 3.00 3.50 3.50 3.50 3.60 3.78 2.65 3.60 3.60 3.60 3.60 3.60 3.60 3.60 3.60	State or Territory and station. Arkansas—Cont'd Durham Do. Do. Do. Do. Do. Do. Do. Do	April	1876 1876 1876 1881 1879 1879 1879 1882 1884 1884 1874 1876 1877 1877 1877 1877 1877 1877 1877	133 277 118 234 24 24 25 25 25 25 25 25 25 25 25 25 25 25 25

De	aily rai	infall	of 2	50 in	nches or more—C	ontinu	ed.			D	aily rai	infall	l of 2.	.50 ii	nches or more—(Continu	ied.		
State or Territory and station.	Month.	Year.	Day.	Amt.	State or Territory and station.	Month.	Year,	Day.	Amt.	State or Territory and station.	Month.	Year.	Day.	Amt.	State or Territo- ry and station.	Month.	Year.	Day.	Amt.
Arkansas-Cont'd				In.	Georgia-Cont'd.				In.	Indian Ter.—Con.				In.	Kansas-Cont'd.		1	1	In.
Newport	April .		16	2.50	Gainesville	Mar		I-2	2-60	Fort Sill		1870	27	3-59	Salina	July	1884	15	
Do	do	1886	17	3.50	Do	do	1884	15	3.23	Indiana.		1882	21	2.00	Sterling	do	1886	3	3-85
Do Russellville	do	1886	39	3.50	Do Griffin			19	3-11	Columbus Delphi		1885	31	3.80	Topeka Do	July			3.05
California.				1	La Grange	Mar	1888	27	2.75	Evansville	Jan	1876	18	2-86	Do	do	1883	10	2.9
Alcatras Island Angel Island	Jan	1886	33	2.60	Do	July	1888	27	3.52	Do	Feb		26	3.21	Waterville	April .	. 1880	11	2.50
Folsom	Feb	1887	5	2.68	Madison	April .	1883	23	4-74	Do		1879	23 6	2.70	Do	July			
Marysville Poway	do	1882	13	3-79	Do	do	1873	11-13	3-44	Do	do	1886	17	2.50	Do	Aug	1880	17	3.0
Santa Barbara	Feb	1889	19-21	3-72 9-93	Do	June .	1881	8-9	4-03 2-96	Do		1880	19	3.40	W.Leavenworth.	April .	1884	18	2.50
Colorado. Golden		1876	-	2.75	Milledgeville	Mar	1886	29 24	4.00	Do			9-10	3.85	Wyandotte	Aug		11	5.10
Trinidad	June .	1878	4-5	3.07	Mossy Creek	do	1887	31	2.60	Do	do	1875	39	2.74	Yates Centre	May	1881	18	2.80
Connecticut.		1875	1	4.30	Newnan	Jan	1882	25-26	3.60	Do		1879	15	2.50	Do	July .	1885	24-25	3.00
Columbia Do	Feb	1875	3	3.98	Do			4	2.95	Do		1882	I	3.00	Do Kentucky.	do	1886	3	2.62
Do	do	1875	25	4-31	Do	do	1884	24-25	3.05	Do	do	1886	7	3-39	Blandville	Feb		20-21	3.05
Do		1876	14-15	3.21	Do	Mar	1875	24-25	3.60	Kokomo Logansport		1883	23	3.10	Paducah	Aug	1879	15	2.80
Fort Trumbuil	ob	1869	14-15	3.90	Do	do	1998	36 8	2.75	Do Monticello	Aug	1886	16	3.20	Do	Mar April .		9	72.60
Hartford	Feb	1886	26-27	2.96	Do	do	1877	14-15	2.50	Rising Sun		1886	17-18	3.15	Do	May	1882	9	24-30
Voluntown	Sept	1885	29 11-13	8-00	Do	May	1879	16 22	3-90	Bpiceland	Mar	1874	5-6 43	2.78	Do	June .		19	? 3.12
Do	June .	1884	25-26	4.50	Do	July	1887	27	3.75	St. Meinrad's A'y	Jan	1879	11	4.20	Do	July	1882	1	13.61
Do Dakota.	Aug	1885	24	2.50	Do	Aug	1887	31 8	3.75	Vevay	Mar	1882	17	2.85	Do	Aug		15	24-10
Fort Meade Fort Pembina	April . July	1884	18-10	4-32	Rabun Gap Do	Jan	1888 1888	16 28	2-90	Vincennes	Mar	1887	6	3.36	Louisiana.	Mar	1887	7	3-55
Fort Randall	do	1880	15-19	3-41	Do	April .	1887	32	2.50	Albion	July	1881	11	6.20	Do	April .	1885	7	3.02
Fort Rice Fort Sisseton	May	1870	31	3.02	Do	Aug	1887	37	4-90	Ames	Sept	1884	23 26	3-50	Do	do		23	2.63
Fort Sully	Mar	1871	14	3.80	Rome	Mar	1888	28	4.35	Burlington	Aug	1878	17	3.81	Do	June .	1886	15	6-31
Do	April .	1871	16	5.00 2.52	Saint Mary's	Feb Mar	1875	19-20	3.00	Clinton	Mar	1878	20-21	2.75	Do	do	1887	16	22-27
Do	May July	1874	1-2	4-55	Do	April . May	1876	2-3	5-70	Do Denmark	Oct Feb	1886	13-14	3.56	Do	Aug		18	3.00
Morriston	do	1879	2-3	2.90	Do	Aug	1887	27 28	3.05	Dysart	July	1880	II	4.60	Amite	July	1886	12	3-00
Webster Delawars.	Feb	1884	17-18	4-33	Savannah	Sept	1887	17	3.00	Fort Madison Ida Grove	May	1886	25	3.50	Baton Rouge	Jan Feb	1879	30	3.00
Dover	Jan Feb	1879	8-9	2.80	Thomasville	June	1873 1880	13	3-25	Independence Le Claire	July. April.	1884	29	3.65	Do	Mar	1875	6	3.90
Do	Aug	1863	2	3.20	Thomson	Jan	1888	25-26 I	3.30	Do	May	1876	6	2.92	Do	do	1875	19	2.55
Florida.	Aug	1886	8	3-25	Do	Feb Mar	1888 1888	20	2.50	Do	June .	1880	4 7	3.94	Do	April.		15-16	4.53
Archer	July	1886	16	3.64	Do	May	1868	20	4.00	Do	July	1875	27	2.87	Do Cheneyville	July	1882	37	3-15
Biscayne Daytona	Mar Feb	1874	28 23	3-42	Do	July	1887	28	3.75	Do		1879	9 2	2.50	Coushatta	Jan June .	1887	29	2.92
Fort Barraneas	Feb	1883	17	2.50	Toccoa	Aug	1887	19	3-04	Do		1880	5 20	3-74 3-31	Do Delhi	July	1887	22-23	2-63
Do	do	1883	2-3	3-92	Do	do	1882	29	3.29	Logan	Aug	1884	12	2.80	Girard	Feb	1886	27	2.60
Do	Mar April .	1879	24	3.05	Way Cross		1882	28	3.00	Mount Pleasant . Muscatine	June . July	1879	30	3.58	Grand Coteau	May Jan		23	3.19
Do	Aug	1882	27 10	3.05	West Point	do	1888	29	4.46	Do Nashua	Aug	1878 1880	19	4.58	Do Liberty Hill	Aug		26	3.12
Do	do	1882	2	3-93	Illinois.			30	2.65	Newton	June .	1882	30	2-90	Monroe	Jan	1886	25	5-35
Port Brooke	June .	1882 1869	19-20	3.76	Abingdon	April .	1876	8-9 13	4 52 5-50	Smithland	Sept	1887	4-5	3.50	Morgan City	Aug		12	4-00
Fort Mende Do	Aug	1886	7-8	5.85	Augusta	do	1880	23	4.00	Arkansas City	Amui)			3.60	Okaloosa	Mar Jan	1878	18-19	12.65
Jacksonville	do	1887	30	2.88	Do Beardstown	do	1874	4-5	3-00	Atchison	Mar	1876	22-23	3.60	Do	do	1878	29	2.80
Do	do	1886	17-18	4.65	Cedarville	Aug	1885	21 10	3.00	Bellville	May	1887	12 25	3.75	Do	do	1886	7-8	5.00
Do	Aug	1887	27-28	5.60	Elmira	April .	1878	21-22	2.63	Do	do	1875	26	3.70	Do	Feb	1879	25-26	3.01
Manatee	do	1887	29-30 I	8.64	Geneseo	June . Feb	1881	7-8	3.31	Do Concordia	July	1874	14 23	3.00	Do	April. June.	1883	6-7 27-28	7-35
Mayport		1885	24 24	3-74	Do Hennepin	Aug	1878	19	3.20	Creswell Dodge City	Mar	1876	31	6.70	Scranton	July	1882	23 28	3.06
Do	Feb	1874	2	3.20	Do	July	1875	18	3.30	East Norway	Aug	1887	20	5-10	Do	June .	1887	28	3.05
		1886	30	3.07	Joliet	do	1887	11	3.00	Elk Falls	July	1885	27	2.50	Maine. Bar Harbor		1887	25	2.73
Do	Aug	1887	28	4.70	Jordan's Grove Louisville	Mar	1888	25-26	3-13	Emporia Fort Dodge	do	1880	3 20	3-25	Eastport	July June .		14	3-00
Do	Aug	1885	30	3-22	Do	Feb	1875	28	3.30	Fort Hays	Mar	1876	5-6	2.50	Gardiner	Jan		9	2.69
Waldo	Feb	1882	21 13	2.62	Lyndon	Feb	1874	9-10	5-20	Do	July	1886 1886	23	3.32	Maryland. Cumberland	July	1887	23	3.00
Georgia.		-			Do	Mar	1877	30-31	4-00	Fort Larned	do		30-31	6.00	Emory Grove	Jan	1879	30	7-00
Indersonville	.do		12-13 30-31	3.50	McLeansborough	June . Feo	1875	13-14	3.69	Ft.Leavenworth.	Mar	1875	29	5.60	Faliston	April . Jan	1879 1886	4	2.50
Do	April .	1883	23 15-16	2.69	Marengo Do	Aug	1888	16	2.50	Do	do	1868	6 13	4-00	Do	Feb	1874	25 11	2.75
Do	.do	1886	28-29	2.75	Mattoon	Jan	1874	22	2.76	Fort Riley	do	1869	16-17	3. 19 5. 46	Do	May	1885	7	2.50
Bainbridge	.do	1883	23	3.20	Mount Sterling	July	1876	15	2.50	Fort Scott	Feb	1871	10	2.75	Do	April. June.	188o 1884	25-26	3.84
Cabaniss	.do	1874	*****	4-00	Do	Aug	1878	17	4.00	Do	April .	1885	22	4-95	Do	Aug	1874	23-24	2.80
Do	July	1884	14	3-11	Pana Peoria	July	1887 1860	18	3.75		June .	1884 1888	12	3.05	Fort McHenry	Jan Oct	1886	22-23	3.44
Do	Jan	1988 1998	1	2.75	Richview Rock Island Ars'l	Aug	1887	16 26-27	3.72	Do	July .	1881	12	3.08	New Market Saint Inigoes	Aug Feb	1874	23-24	2.72
Do	April .	1887	24	2.50	Do	Mar	1870	11-12	5-30	Independence	Feb	1878	20-31	2.55	Do	April .	1874	19-20	2.50
Do	.do	1883	23	6-30	Do		1870	14-15	4-75	Do		1885	21 22-33	3.28	Woodstock Col	Sept	1886	15-16 3-4	3.01
Dahlonega	.do	1874	22	3.40	Sandwich	Feb	1876	8-9	3.33	Do	July .		13-14	3.67	Do	Mar		30	2.70
Do	.do	1874	23	2.51	Do	do	1876	17-18	3.00	Lawrence	Sept	1878	3	3.27	Amherst	Aug	1887	18	3.26
Porsyth	.do	1874	9	3.15	Do South Evanston.	July	1875	27	3.13	Le Roy	June .	1875	5 30	2.73	Do	July	1887	23-24	5.79
Do	.do	1883	9-10	3-94	Indian Territory.					Morse-Pontiac	.do	1875	13	2.60	Do	June .	1887	24	2.65
Do	.do	1883		2.83	Fort Gibson	Sept.	1875	22	2.76	Ninnescah Do	April .	1885	20-21 I	3.28	Ft. Independence Do	Mar	1864	15	2.50
ainesville	Jan .do	1875 2	28-29	3.30	Fort Reno	April .	1884		2.76	Do	.do		19-20	2.50	Do	do	1864	30-31 25-26	4.00
		mW// 19		[]	Do	Tany	1885		4-00	Pretty Prairie	do	1883	5-6	3-75	Do	April	1964	25-26	2.50

2	any ru	T de	1	1	iches or more—C	d	1	-	-		Á			1	iches or more—C	l d	1	T	T
tate or Territo- ry and station.	Month	Year.	Day.	Ams.	State or Territo- ry and station.	Month	Year.	Day.	Amt.	State or Territory and station.	Monti	Year.	Day.	Amt,	State or Territory and station.	Monti	Year.	Day.	-
Mass,-Cont'd.				In.	Missouri-Cont'd.		1		In.	N. Hampshire-Con			1	In.	Ohio-Cont'd.			1	1
1. Independence	May	1875	6-7		B int Joseph		1876	6	4-07	Antrim	July .	1883	15	3.00	New Bremen	Jan		11	
Do low Bedford	Ang	1893	pB-50	3-00	Do			8	3-80	Do Belmont	do	1887	25	3-27	Pomeroy			16	3
Do	Aug	1887	25	3-10	. Do			25	2.50	Bristol	July .	1887	24	2.67	Do	do	1834	12	
Dothampion	do	. 188a	4-5	3-30	Do	do	1878	- 10	2-71	.Do	Aug	1884	22	3.08	Do				
orthampton	Feb .	1875	1 3	3-20	Saint Louis	Oct	1881	93	3.60	Lake Village Nashua	July	1885	23-24	3-28	Quarker City			18	
inecton ovincetown	do	1984	9	3-17	Do	do	1878	23	3.26	Plaiston	June .	1875	9-10		Ruggies	do	1879	3	П
merset	Jan	1881	10		Do	Mar	1859	28	2.76	Weir's Bridge	Aug	1885	I	3-22	Sidney	do	1886	16	5
Donner	Feb	1996		6-80	Do	April .		26	2-62	Wolfborough	do	1885	4	2.83	Timn				
neyard Haven.	Mar	1876	25-36	3.00	Do			15	3-13	New York.		reny	24	3-55	Washington C. H. West Milton			25	
orcester	Mar	1870	23-26	3-37	Do	do	1854	13	3-23	Ardenia	Feb	1876	14-15	2.78	Oregon.			1	4
Michigan.			1		Do	do	1850	25	3-35	Do	Mar	1877	28	2.88	Albany	Jan	1881	11	
g Rapida			28	3-04	Do			37	3.50	Do	April .	1867	13-14	4.70	Mount Angel			2 8	
Do	00	17003	18-19	3-20	Springfield	July		37	3-10	Do	Aug	1856	29	2-23	Pennsylvania.				4
DALLES .	ATTM	I STATE OF	- 100	2+86	Do	Aug		31	3-30	Cooper Union	Nov	1877	8-9	3-64	Altoona	Aug	1885	3	H
les	Feb	19941	20-27	3.60	Stoutland	July		19	3.60	(N. Y. City)	Feb	vilve.	25	4-00	Bethlehem Blooming Grove.	July.	1885	21	
Do	No.	115500	28	3-25	Wet Glaise			18	3.00	Do	Mar	1876	20-21	2.80	Do			38	
Do	Feb	1853	24-25		Do	do	1875	29	3.60	Do	do	1876	. 25	4-30	Do	do	1886	1	et)
Ivel	do	1870	3	3-00	Do	do	1876	13	3.90	Flushing			20-21	3.10	Brookville	do	1885	3	
Minnesota.	Ana	1994		3-00	Montona.	**00 ***	1876	15	3-40	Fort Hamilton			25	2.74	Brownsville	do	1875	3	
esterrs. Ripley	June	1872	16	2.69	Fort Benton	July .	1872	1-2	6.56	Do	Mar	1876	25	3.76	Do	Sept	1876	18	
Do	Aug	1874	20-21	72.80	Fort Keogh	May	1886	30	3.84	Fort Wood	Jan	1862	6-7	2.50	Chambersburgh .	July		4	
Do	, do	1874		72-80	Fort Shaw	May	1876		4-26	Hudson	do	1977	24-25	8-30	Confluence Drifton	July.	1880	28	
To Snelling	Mag	1865	8-9	3-50	Nobeaska.	May	1879	23-24	4.10	Do	Mar	1876	25	3.36	Dyberry	do	1583	1	
Do	do	1877	90	3-34	Brownville	July	1886	31	3.00	Oneida	do	1876	7	2.80	Do	do	1987	21	1
Do	July .	1863		2.50	Central City	June .	1379	80	3. 90	Pelham Manor	July .	1877	30	3.26	Egypt		1885	3	4
Do nneapolis	July	1887	13	2-90	Do		1879	16	2.50	Watervliet Ars'l.	Oct	1873	6-7	2.70	Fallsington	Mar	1876	25	a
orhead	do	1886	3	4-50	Do	Aug	1879	5	2.50	West Point	Sept	1884	21-02	5-80	Do	July	1879	35	4
rthfield	Aug	1885	11	2-70	Clear Creek	July .	1880	7	4.50	White Plains	Jan	1878	4	2.80	Freeport	do	1885	13	а
chester	July .	1885	8	2-56	De Soto Fort Hartsuff	June .	1878	30	2.53	Do	do	1881	9-10	3. 10	Do	Aug Sept	1885	18	Л
dena	July	1886	6	3.08	Do		1880	4-5 13	3-94	Do	Feb	1882	4-5	4-70	Johnstown	Jan	1885	18	
Do	June .	1880	88		Fort McPherson.	April .	1975	1 7	2.50	Do	do	1883	11	4.80	Do	July	1886	27	1
Do	., do	1880	22-23	2.86	Do	May		17	3.20	Do			20-21	3-20	Mahanoy Plane	Jan	1886	6	а
Mississippi.	Fob	1874	6	2.50	Do	June .	1868	25	7.00	Do	April .	1878	27	3.90	Do	Feb	1886	3-4	а
Do	do	1876	20-21		Do			23	3.20	North Carolina.			1		New Geneva	June .	1880	15	4
Do	do	1880	1-3		Geneva	July		23	3.50	Brevard	Jan	1985	12	2.80	Newtown	Jan	1839	36	4
Do	do	1876	6	3.00	Lincoln			22	3-25	Chapel Hill	Aug	1883	22-23	3.70	Quakertown	April .	1840	29	4
Do	Ont	1876	14-15	3.85	Do	do		17	3.00	Elsworth	Sept	1880		4.00	Do	May	1886	6-7	1
yette	Jan	1862	31	3.00	Madison	May		15	5.00	Fayetteville	Jan	1879	8-9	6.00	Wellsborough	Jan	1884	30	1
Do	do	1883	9-6		Marquette	June .	1587	11	2.56	Do	Mar	1879	30 28	8.75	Do	June .	1886	3-5	
Do	Fob	1883	20-21	3-40	Nebraska City Omaha		1883	17	2.95	Forest Hill	Jan	1882	97-98	3-49	West Chester	Aug	1883	2	1
Do	do	1881	3-6	3.00	Peru	June .	1883	16-17	4-75	Fort Macon	do	1884	8	2.51	Do	Sept	1876	23-24	4
Do	Aug	1875	15	3-30	Plattsmouth	April .	1876	10-11	2.50	Fort Johnson	Aug	1874	24	3.30	Westtown	Feb	1887	11-12	4
enada illy Springs	Jan	1870	24	3-15	Do	May June .		30-31	2.63	Fort Macon Flat Rock	Jan	1882	15	3.19	Zionsville	200	1000	13	1
koon	April .	1874	99	3-90	Do			19	2.67	Franklin	Mar	IRRO	3-4	2.60	Dutch Island	Aug	1874	8-9	ı
ko	July .	1883	33	8-52	Do	do	1874	10	2.70	Goldsborough		1875	11-13	3-95	Fort Adams	Mar	1863	25-26	4
ridian	do	1882	93	3.00	Do	July	1875	10	3.50	Do	July		15	3-10	Do	June .	1867	24-25	1
Do	Aug	186g	3-3	4-05	Do			24-25	2.00	Highlands	Feb	1881	11	2-90	Do	do	1869	28	4
anton	do	1963	30	3.01	Do	do	1885	28	2.98	Kitty Hawk	July	1883	13	2.66	Do			9 10	4
rkville	do	1863	25	8-51	Do	do	1885	23	3.11	Do			11	3.83	Do			23	١
koburgh Do	Fob.	1807	19	3-40	Do	do	1875	14	3-75	Do			15	8-14	Do	Aug	1867	23	4
Do	do	1869	3	3-10	Do	do	1884	16	4-13	Do	do	1887	3	4-27	Do	do	1874	7-9	
Do	do	1869	8	3-40	Ponca	June .	1880	14	3-75	Lenoir	July .	1887	19	2.80	Do	ob	1577	25-26	
Do	do	1869	16	3-10	Santee	May		27	2.75	Lincolnton	July.	1886	26 I	2.50	Newport	do	1874	4-5	1
Missouri.	STREET SE	1000	80	2.50	Table Rock			17	2.50	Lumberton	Aug	1887	27	2.90	South Carolina.	1			
sneville	Feb	1882	19	3-11	Do	do	1883	16-17	4-75	Do	do	1882	14	2.52	Bennettsville			27	1
Do	April .	1882	21	2-95	Yutan	July .	1884	16	2-60	Marion	do	1807	1-2	5-23	Cheraw			19	1
Do	July	1986	27 18	3.86	Barnesat City	Ang	1889	27	3-73	Murphy	Jan	1882	11	2-80	Do	Aug	1883	14	1
Donner	OD	1075	38	2.50	Bordentown	July .	1887	24	8-52	Do	Feb	1875	23-25	6.80	Columbus	Mar		15-17	1
Do	do	1875	31	3-00	Caldwell	June .	1884	25-26	5.40	New River Inlet. Do	July .	1880	15	4.00 2.50	Do	April .		16-17	1
Do	Ang	1884	31	2-51	Cape May Egg Harbor City.	do	1886	27	3-10	Raleigh	do	1887	7	1.90	Evergreen	Aug	1887	7-8	1
nawick	May	1880	10	2-50	Elisabeth	Jan	1881	9	2.67	Scott's Hill	do	1883	25	2.87	Evergreen Fort Moultrie	May	1860	17	1
Do	June .	1981	91	3.00	Do	Aug	1879	17	4-54	Southport	do	1886	. 1	2.52	D0	Aug	1860	14	1
Do	July	125254	13	2.92	Freehold	Jan	1881	9	3.68	Do			- ZE	5.60	Greenwood Hacienda Saluda.	Mar	1885	26-27	1
Do	do	1884	15	2-79	Gillette Hightstown		1887	25	4-27	Salisbury	July	1887	4 7	3.00	Hardeeville	July	1882	23	ł
Do	Aug	1879	6	2-50	Lambertville	June .	1884	26	4.17	Tarborough	do	1887	4-5	5-14	Jacksonborough.	do	1882	22	1
Do	do	1850	88	2.50	Do	do	1862	3-4	2.92	Do	Aug	1887	19	3-49	Spartanburgh	Mar	1875	6-7	1
thage	July	1886	24	7-21	Little Egg Harbor	Ang	1882	37-36	6.20	Weldon	Mar	1879	12	6.03	Do		1887	21	1
ception	Jun	1886	39	3-50	Mattawan Newark	Ang	1887	37-36	5.40	Do	July	1885	27	2.70	Statesburgh	Mar		16-17	ı
BBBBB	Feb	1552	20	3-02	Newark New Brunswick .	June .	1884	25-26	4.32	Do	Aug	1887	. 2	2.61	Do	do	1882	25-27	-
Do	June .	1886	27	3.00	Do	Aug	1887	2	3.67	Wilmington	July	1874	3	5,50	Do	May	1886	20	t
Do	July	1870	25	3-54	Oceanic	do.	1887	26	2.52	Canal Dover	Jan	1863	20	2.50	Yamassee	July	1884	10-12	l
Do		1885	14	7.61	Patterson Phillipeburgh	Ang	YRRS	. 23	4.86	Do	Feb		3	3.00	Tennessee.				I
erson Bar'ks.	Feb	1882		2.80	Rancocas Readington	July	1887	23	2-50	College Hill	Jan	1882	4	2.50		Jan		27	1
ome	Bept	1886	97	3.50	Rendington	June .	1864	25-26	8.10	Do	Aug	1879	24-25	2.50		Aug	1885	12	ľ
anna City	June .	1879	27	3-35	Do	July .	1884	3	2-50	Do Elyria	Feb	1886	17	2.68		Sept		7 5	l
Do	,do	1883	17	3-29	Somerset	Feb	1870		3-35	Greenville	Aug	1886	17	3.70	Do	do	1887	28	ı
Do	AUE	1884	25	2-74	Do	.do	1879	22	2-50	Hanging Rock	.do	1886	22	3.00	Carthage	Feb	1887	2	ľ
Do	.do	1865	88	3.85	Somerville	July	1867	23	3.01	Kenton	Jan	1876	27-28	5-10		Jan	1886	3	ø
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ekson		1887	23	2.67	Fort McKavitt	Aug		27	2-55	Griggsville	June .	1883	20	1 30	1.50	Missoula	Inne	vilne	7.0	0 31
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rmingdale	do	1887	23 14-15	5.70	Jacksborough	July	1882	29	5.06	Peoria	April .	1873	5	1 05	1.13	Nebraska.				
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and View	do	1884	14 23	3.10	Do	Feb	1877	11-13	7-3I						-	Do Clear Creek	July	1886	31	1 20
well	do	1885	16	2.89	Do	do		6-7	3.00	Ind. Territory.						Do	do	. 1880	7	0 45
henwald Do	OD	1885	16	2.79	Do	July	1875	31	2-50	Fort Reno	May	1885		0 50		Do	do	. 1881	10	0 35
Do	do	1557	23	2.80	Do	Nov		17	7.00	Fort Sill	May	1877		1 30		Do De Sota	July	1876	15	O 55
Dohnsonville		1888 1886	7 20	3.03	Mesquite	Feb	1880	1-2	5-00	Do	Sept	1870		35		10	AUE	1070	3	2 15
ngston	Jan	1885	16	2.65	Do	Mar	1877	1	3.00	Indiana.						Pt. McPherson.	May	1873	21	0 55
Do		1886	23	3.51	New Ulm	Sept	1875	17	6.12	Clinton	June .	1884	24	2 30	2.97	Do	June .	1868	9 25	1 15
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Do		1884 1886	37	3.30 5.61	Sour Lake	Aug		2	3.00	Rising Sun	do	1874	27	3 00	4-45	Do	do	1868	25	6 50
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Kensie	Jan	1885 1884	31	3.30	Terrell	July	1879	22-3-4	2.80	Iowa.	_					Howard Nebraska City.	May	1879	12	1 00
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dleton	Aug	1886	30 16	2.55	Do Woodstock	April .	1874	29	2.60	Denmark Elkader	April .	1880		30		Peru Richmond	July	1884		I 00
kwood	Jan Feb	1885		2.58	Woodstock	Aug	1885	13	3-04	Ida Grove Mt. Pleasant	July	1883	15	00	2.00	Santee Sidney Bks Do	May	1875	27	2 30
	Jan	1884	23	3.50	Bird's Nest	Aug	1885	7-8	6.45	Mt. Pleasant	June .	1878		1 15		Sidney Bks	July	1874		I 30
wberry Pl'ns	April .	1886	5	3.40	Capeville	do	1887	3 20	2.50	Newton Do	July	1878		00			o day	2013	-2	- 3-
ntonnesborough.	Jan	1887	23	3.10	Dale Enterprise.	Jan	1886	8-9	5-49	Nora Springs	Aug	1876	16	00	1.70	New Jersey.				
on City	July .	1884	5	2.50	Dover Mines	do	1886	11-12	2.50	Kansas.						Phillipsburgh .	Aug	1882	7	I 00
Texas.	Jan	1882	20-21	2.60	Fort Monroe	April .	1883	16-17	2.98	Baxter Springs	May	1876		18		Readington	do	1882	7	2 30
Do	Feb	1882	3	3.00	Lynchburgh Variety Mills	Jan	1884	8 22	3.92	Bellville Creswell	Sept	1880		35		New Mexico.		-		
Do	July	1886	28	4-20	Wood Lawn	June .	1878	17-18	2.80	Dodge City Ellinwood	Aug	1878	27	13	2. OI	W Tinion	Ann	-99-	10	0 50
ksville	Jan	1874	.22	2.50	Washington.			-		Fort Have	Feb	1860		30		Fort Union	Aug	1003	14	0 50
Do	do	1874	31	2-50	Bainbridge Isl'd. Neah Bay			23	2.75	Fort Larned	July	1862	8	00	6.00	New York,				
Do	do	1882	30	2.50	Do	do	1885	6-7	6.15	Fort Riley	June .	1863		55		White Plains	July	1882	2	1 35
Do Do	Feb	1874	19-20	3-75	West Virginia. Helvetia	Aug	1884	21	2.60	Do Do Fort Wallace	do	1868	13	00	I.00					-
Do	do	1880	27	3-75	Morgantown	do	1882	27-28?	3-38	Fort Wallace	June .	1880	30	45	1.20	North Carolina.				
Do	April.	1881	5-6 25-26	4.00	Parkersburgh Wheeling	Aug	1887	26	3.34	Ninnescah	June .	1886	I	00	2.72	Franklin			21	1 30
Do	do	1877	7	2.50	Wheeling					Topeka Washburne Col	July	1876	14	00		Goldsborough . Hatteras			30	0 45 I IO
Do	do	1877	17-18	3.00	Beloit Do	Aug	1877	18-19	4.00	W. Leavenw'th	May	1886		45	3.63	Lenoir			28	1 05
Do	July	1875	31	4.00	Do	Sept	1880	18-19	2.82	Do	do	1886		20		Southport Statesville	Aug	1882	11	0 30 1 30
Do	do	1886	19	3.50	Bloomfield	Feb	1881	3-4	3.30	Do	do	1870	19	05	1.75	Do	Nov			1 00
eman City	do	1882	22	2.80	Do	Sept	1875	7-8-9	4.85	Do	do	1887	16	00	2.15	Ohio,				
Do	do	1885 1885	21-22	4.68	Franklin	July .	1885	11	2-98	Do	do	1884	17 (45	2.00	Onio,				
sicana	Aug	1882	9	3-00	Lancaster	July .	1884	23	2.79	Do	do	1885	27	30	1.40	Cincinnati Margaretta T'p	Aug	1882		0 35
	do	1882	24	3.02	Do	Aug	1887	10	2.50 3.35	Do	do	1886	26	00	I . 80	Portsmouth	May	1860	21	
Do	do	1882	25	2.57	Manitowoe	July	1883	21	3-41	Do	do	1886	25	45	1.00	Demondancia				
	May	1881	2	3.80	Do Millsville	Ang	1884	22	3.32	Do		1885	20	45	1.10	Pennsylvania.				
t Brown				£-30	Ripon	Inly	1003	17		Do	00					Carlisle				
bo	June .	1877	18-19		prespectations are a constant,	wury	1883	23	3.34	Do	do	1884	7							
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t Brown Dot Clark	June .	1877	18-19				-	23	3-34	Do Do Do	do July do	1884 1884 1887	3 20 21	20	1.20 1.00 1.90	State College Tamaqua	July June .	1870 a 1887 1884	20 21 10	1 30 0 40 0 45
t Brown Dot Clark	; rain-gr	auge o	verflo		t 2.30 inches. † Pa		-	23	3-34	Do Do Do	Julydodo	1884 1887 1587 1884	3 20 21 24	20 20 45	1.20 1.00 1.90 1.30	Do	July June .	1870 a 1887 1884	20 21	1 30 0 40 0 45
t Brown DotClark	; rain-go	auge of May	verflo	wed a	t 2.30 inches. †Pa	art estin	nated	23	3-34	Do Do Do Do	July do do Aug do	1884 1887 1587 1884 1885 1887	3 20 21 24 11 12	40 20 20 20 45 45 30	1.20 1.00 1.90 1.30 1.20 1.00	State College Tamaqua Wellsborough.	Julydo Junedo	1870 1887 1884 1884	20 21 10 24	1 30 0 40 0 45 0 50
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Reputa	da	excessive	meadad	tation	tables

Pu	blished	-			Should be—							
Station.	Month	Year.	Day.	Time	Aust.	Station.	Month.	Year.	Day.	Time	Amt.	
				A. m	Ina.					A. m	Inc.	
Clarksville, Tex Tatoush Isl'd, Wash	Jan	1875	9		6.50	***********	Jan	1875	27-28	****	6.5	
Oneida, N. Y	do	1000	00000	0000	200.29	Stricken out.		-			200.00	
Nashville, Tenn	do	1874	21-22		5- 26	Do.						
Division Section A. 10 f.	de	1.000.0	W 80		0.00	The.			-			
Key West, Fla	do	1872	5-6	1 30	2-00		Feb	1872	5	1 30	2-0	
Nichols, N. Y	do			00.00		Stricken out.			1		-	
Archer, Fla				2229	13.33		America.	1880	****			
Daytona, Fla						************					1.50	
Pittsburgh, Pa Vicksburgh, Miss			20	3 45	2-40	Stricken out.	auly	1000	20	- 34	1.3	
Jacksonville, Fla	do	1981	23	3 43	1.07	Do.						
Cedar Keys, Fla	do	1878	24		3-79		April .	1867	24		3-79	
Vicksburgh, Miss			6		3.00	************	do	1868	19		3.00	
Brookhaven, Miss					20.35	***********	do	1874			30-35	
San Francisco, Cal .						***************************************	do	1880	*****		****	
Fort McHenry, Md.	May	1882	26	2 15	2-50	Mt.St. Mary's.	May	1882	20		2.5	
Milwaukee, Wis	OD	1878	23	0 53	0.50		Inne	1070	23		10.50	
Columbus, Miss Fort Barrancas, Fla					9.66	***********	do	1900A	19		2.6	
Eimira, Ill											2.70	
Burlington, Kans						Burlingame	do					
Fort Independence,					-							
Mass	June .	1879	1		2.50		June .	1879	29		2.50	
Fort Snelling, Minn			14		2-40	Stricken out.						
Pass Christian, Miss			****	****	12-72	***********	June .	1883			12.72	
meids, N. Y											4.00	
Charleston, S. C Fort Wayne, Ill	do	1002	10	****	4.90	Ft. Wayne, Ind	do	1002	10		4.00	
Foreyth, Ga	do	NRRE	*****		11.84	a er se my med med	do	1886				
avannah, Ga	do	1887			10.06		do	1807			10.70	
Clinton, Iowa	July	1877	7	****	2-74		July	1879	7	****	2-74	
Fort Sully, Dak	do	1871	- 31		6-45	***********	do	1871	31		3-00	
Do	do	1878	21-22		6-45		do	1878	21-23		3.00	
Fort Sill, Ind. T	do	1870	II	****	3-78	**********	OD	1870	9	****	3.78	
Logan, Iowa	do	1878	*****	****	10.01	Carnavilla	do	1078			13.23	
Branville, Iowa Lake Hook, Minn	ob				27 95	OMCHINVIIIO	do	1822	00000	0000	12. 25	
Incincted III	40000	1072		****	EE - 00	Otnicken out		10/8			-2.33	

Errala in excessive precipitation tables.

Pul	blished	-				2 3	Bhould	be-			
Station.	Month.	Year.	Day.	Time.	Amt.	Station.	Month.	Year.	Day.	Time.	Amt.
			-		Ins.					A. m	Ina.
Davenport, Iowa	do	1880	- 4	1 25	I- 20	Stricken out.					
amar, Mo						************	July	1885	2-1		4-44
harlotte, N.C			- 1		2.85	Stricken out.		1	-		-
acksonville, Fla	do	T881	18	1 15	1.00	Do.					
Ley West, Fla			13	1 15	1-18	Do.					
Columbia, S. C			22	1 75	2.40	**********	July	1873	21	I 15	2.40
fanchester, N. H	do	1807	23-24	3	2, 57		do	1887	23-24		5. 17
ayette, Miss	Ame	LETE	25		2- 30		Ang	1875	18		3-36
outh Orange, N.J.			. 2		3.74		dir	1878	1 2		3-47
ft. Auburn, Ohio			7.7		3-74	***********	do	1880			2-95
ort Monroe, Va	do	190c	-3		2.40	Stricken out.		AUGUS	- 3		4.30
ew Bedford, Mass.	do	1007				**************	Ang	-98-	2		2.60
Wood's Holl, Mass.			-0	****	3.00	***********	40	100/	+8		5- II
Westborough, W.Va			10		2.11	Wellsburgh	do	-000	20		3. 44
binomille Ge	do	1000	*****		2 60	**************	do	1800	4		3.60
Painesville, Ga Dunbarton, N. H	uo	1879	- 4	****	1.00	***********	do	10/9	-0		3-12
Annarion, N. H	00	1879	0	****	3.12	Harrisville	do	19/9			
farrisonville, Mich	00				*****	TIMITISALLIS	00	-00-			- 6-
arkston, Dak	00	1977	29		3.00	***********		1007	29		3.60
uttenburgh, lowa.	00	1870			4-25		00	1870	30		4-25
hicago, Ill	ob.,	1805	2-3		3.90		db	1885	2-3	0000	6. 33
pringfield Armory,		-				M. V. S					
Mass	Aug	1855		****	11-72	Stricken out.		00			
luggles, Ohio	sept	1883	21		4-50		sept	1883	1		4-50
Wellsborough, Pa	do	1876			12.33	West Chester.	do	1876			12-33
Do	ob	1870	23-24		4-75	00	00	1870	23-24		4-75
aint Mathews, S.C.	.do	1874	14-15		2.52	Spartanburgh.	do	1874	14-15		2-52
Vashington, Ga	do	1878			12-12	Walthourville	do	1878	*****		12.12
tabun Gap, Ga	.do	1887	17		6.20	Saint Mary's	do	1887	17		6.20
fount Sterling, III.	.do	1886	1	0 30	1.40	************	do	1876	I	0 30	I-40
ranville, lowa	.do					Garnavillo	OD				
aint Claire, Iowa	.do					Le Claire	do				
ennison, Iowa	.do	1874	18		2-50	Des Moines	do	1874	18		2-50
femphis, Tenn	.do	1886	27		1.17	Stricken out.		100		1	
es Moines, Iowa	.do	1881	1	I 00	2.55	Do.					
Vilmington, N.C	.do	1880	IO		7.30		Sept	1883	10		7-30
leveland, Ohio	.do	1877				Stricken out.	****	-0		1000	
acksonville, Fla			9	0 45	1.00	Do.					
homasville, Ga			10		3-00	Thomson	Oct	1887	19		3-00
rescent City, Cal I											

Table of miscellaneous meteorological data for December, 1888—Signal Service observations.

	\$	At	mosp	heric r	-	in inches	-				air, in deg	rees Fal	hrenhei	1 100	e of rees	i.	nor- n, is		Win	ads.			.II
41/63	above s	à	mouj.	po	Extre	18	nean. p.m.)	from		Extre	emes.	. 6	Daily		degre	tion,	from no	94 e-	direc-		imun	days.	ays.
Stations and districts.	Elevation ab	Mean actual rometer.	Departure fron	Mean reduc	Highest barometer. Date.	Lowest 5 barometer. Date. Monthly rang of barometer.	Monthly n	Departure normal	Max. Date.	Mean max.	Min. Date.	Mean min. Monthly range	Greatest.	Least. Date. Mean relativ	Mean tempe dew-point, Fahrenheit.	Precipita inche	Departure mal preci		Prevailing di	Miles p. h.	Direction.	of E	No. of clear days.
New England. Eastport Portland Manchester Northfield. Boston Nantucket Wood's Holl Vineyard Haven. Block Island Narragansett Pier New London Mid. Allantic States. Albany New York City Philadelphia Atlantic City Baltimore Washington City Cape Henry Lynchburgh Norfolk Harrisburg S. Allantic States. Charlotte. Hatteras. Kitty Hawk† Raleigh Southport Wilmington Columbia Augusta Savannah Jacksonville Florida Penissula Titusville Cedar Keys § Key West Jupiter Micco Eastern Gulf States. Atlants. Pensacola Mobile Montgomery Vicksburg. University New Orleans Auburn Port Eads Western Gulf States. Shreveport Fort Smith Little Rock Corpus Christi Galveston	\$33 \$39 \$247 \$47 \$35 \$33 \$217 \$222 \$245 \$470 \$300 \$300 \$300 \$300 \$300 \$300 \$300 \$3	29-8: 29-9: 29-8: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 29-8: 30-1: 29-9: 30-1: 29-9: 30-1: 29-9: 30-1: 29-9: 30-1:	2 - 06 - 07 - 07 - 06 - 07 - 07 - 06 - 07 - 07	29, 88 8 29, 93, 68 8 29, 93, 99, 96 29, 99 96 29, 99, 98 29, 99 98 29, 99 98 29, 99 98 29, 99 98 29, 99 98 29, 99 98 29, 99 29, 99 20, 10 20,	30. 51 30. 52 30. 53 30. 55 30	#001 # 1	28. 2 2 28. 4 29. 3 29. 3 29. 3 29. 3 34. 6 37. 9 36. 0 34. 6 37. 9 34. 4 4 3 35. 2 2 35. 2 2 2 2 2 4 2 4 4 3 2 5 2 3 5 9 2 3	1.6	51. 7 266 57. 0 265 58. 0 25 58. 0 25 58. 0 25 58. 0 25 58. 0 25 58. 0 27 57. 0 28 54. 3 27 53. 3 27 54. 3 27 54. 3 27 55. 3 26 66. 3 26 66. 3 26 66. 2 26 66. 2 26 66. 2 26 66. 2 26 66. 2 26 67. 7 26 69. 5 26 69.	34-3 337-7 32-9 43-6 43-6 43-8 44-5 39-7 4-6 43-8 44-5 55-9 40-1 51-5 55-9 40-1 51-5 55-6 62-6 65-2 71-1 71-1 71-1 71-1 71-1 71-1 71-1 71	3-1 14 12 15 16 17 17 16 17 17 17 17	22. 1 54. 22. 6 57. 18. 0 59. 27. 7 55. 30. 6 51. 29. 8 44. 28. 6 43. 22. 8 54. 29. 4 47. 30. 9 42. 29. 9 44. 23. 9 42. 28. 6 45. 28. 6 45. 28. 6 45. 28. 6 45. 28. 6 45. 28. 6 45. 28. 6 45. 28. 6 45. 28. 6 45. 28. 6 45. 28. 2 43. 33. 7 48. 40. 6 47. 31. 5 50. 6 34. 44. 6 45. 50. 1 43. 6 45. 6 45. 6 45. 50. 6 34. 40. 6 47. 33. 1 44. 7 39. 2 44. 7 39. 2 44. 7 39. 2 45. 6	8 30.0 152 5 26.7 38.3 32 5 26.7 38.3 32 5 28.5 5 151 5 28.5 5 151 6 2 24.0 2 2 24.0 7 2 27.5 5 2 27.5 152 2 27.5 5 3 30.0 152 2 2 2 7 5 3 30.0 152 2 2 7 5 3 3 3 5 3 3 3 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3.2 19 76.2 19	9 21.6 8 21.0 4 21.7 1 20.2 23.6 6 31.8 8 29.3 8 29.3 8 29.3 8 29.3 8 29.3 8 29.3 8 29.3 8 29.3 8 20.4 26.2 30.4 26.3 8 30.4 4 24.8 8 36.0 41.6 6 51.8 6 51.8 6 56.8 4 66.6 51.8 8 36.0 41.6 6 51.8 8 51.8	0 L d 3 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -	- 0.16	8, 564 6, 717, 75 9, 644 7, 762 9, 832 14, 982 14, 983 14, 983 14, 983 14, 983 14, 983 14, 983 14, 983 18, 576 18, 576	nw. sw. nw. sw. nw. sw. nw. sw. nw. nw. nw. nw. nw. nw. nw. nw. nw. n	48 48 48 48 51 60 33 40 30 50 50 48 46 36 33 48 42 23 50 26 35 35 35 48 48 51 23 48 48 51 23 48 48 48 50 48 48 48 48 48 48 48 48 48 48 48 48 48	e. e	10 1 12 7 8 1 1 1 1 1 2 2 2 1 1 8 1 3 8 9 9 6 6 8 8 8 6 7 6 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	CC
San Antonio Rio Grande Valley. Rio Grande City Brownsville Ohio Val. & Tenn. Chattanooga Knoxville Memphis Nashville Louisville. Indianapolis Terre Haute Clincinnati Columbus Pittsburgh Parkersburgh Lexington Lower lake region. Buffalo Oswego Rochester Erie Cleveland Sandusky Toledo Detroit Upper lake region. Alpena Escanaba Grand Havon Lansing Manistee Marquette. Port Huron Chicago Milwaukee Green Bay Duluth Sault de St. Marie. Extreme northwest. Moorhead Saint Vincent Bismarck	511 781 23(5 57 58) 23(6 57 58) 24(6 55) 24(6 55) 24(6 55) 24(6 55) 24(6 55) 24(6 56	29. 3 30. 1 30. 1 30. 29. 3 30. 1 30. 29. 1 30. 29. 1 30. 29. 1 30. 29. 1 30. 29. 1 30. 29. 1 30. 29. 1 30. 29. 1 30. 29. 1 30. 29. 2 30. 29. 3 30. 30. 30. 30. 30. 30. 30. 30. 30. 30.	2 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	30-12 30-13	30. 46 20 30. 55 23 30. 57 23 30. 57 23 30. 57 23 30. 57 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 56 22 30. 55 22 30. 56 22 30. 55 22 30. 56 22 30. 55 22 30. 56 22 30. 55 22 30. 56 22 30. 55 22 30. 56 22 30. 55 22 30. 56 22 30. 57	29, 70 1, 50 . 70 . 29 . 83 1 5 0 . 74 29 . 84 1 5 0 . 64 1 7 0 . 93 29 . 64 1 7 0 . 93 29 . 64 1 7 0 . 93 29 . 64 1 7 0 . 94 29 . 66 1 7 0 . 85 29 . 66 1 7 0 . 85 29 . 66 1 7 0 . 85 29 . 66 1 7 0 . 85 29 . 66 1 7 0 . 85 29 . 66 1 7 0 . 85 29 . 66 1 7 0 . 85 29 . 66 1 7 0 . 85 29 . 66 1 7 0 . 95 29 . 67 1 1 . 07 29 . 60 1 7 1 . 07 29 . 60 1 7 1 . 07 29 . 60 1 7 1 . 07 29 . 60 1 7 0 . 95 29 . 60 20 0 . 9 . 9 . 9 . 9 . 9 . 9 . 85 2 6 0 . 9 . 29 . 53 2 6 0 . 9 . 29 . 29 . 60 2 6 0 . 9 . 29 . 29 . 40 2 6 1 . 0 . 0 . 29 . 29 . 20 2 6 0 . 9 . 29 . 29 . 40 2 6 1 . 0 . 0 . 29 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 29 . 20 2 6 0 . 9 . 20 2	54,5 5,5 5,5 5,5 5,5 5,5 5,5 5,5 5,5 5,5	1.66 + 1.	72.0 11 75.3 15 84.2 15 78.0 15 65.2 25 59.8 16 66.4 5 65.0 26 65.5 25 66.0 24 65.6 2.0 26 66.1 26 66.1 26 66.1 26 66.1 26 66.1 26 66.1 26 66.1 26 66.1 26 66.1 26 66.1 26 66.1 26 67.0 26 67.0 26 47.0 24 47.5 4 47.0 24 47.5 4 47.0 24 47.0 24	51.5 - 52.6 - 52	33.0 4 41.0 4 20.1 21 21.5 ¶ 22.9 20 17.0 20 17.4 22 18.9 22 18.3 22 12.3 22 12.3 32 15.0 ¶ 3.8 12 22 12.3 32 15.0 ¶ 3.8 12 22 12.3 22 11.0 ¶ 3.8 12 22 12.8 22 13.8 22 13.8 22 13.8 22 14.8 28 14.8 28 14.8 28 14.8 28	46. I 40. 48. 9 51. 54. 6 37. 33. 6 45. 33. 3 38. 36. 9 43. 33. 3 344. 29. 5 38. 30. 9 45. 29. 6 49. 28. 5 56. 28. 8 38. 30. 9 45. 29. 6 54. 28. 8 43. 29. 6 54. 26. 6 34. 21. 0 36. 25. 6 34. 26. 6 38. 21. 3 44. 21. 0 36. 25. 6 43. 26. 6 38. 21. 3 44. 21. 1 42. 21. 0 36. 25. 6 43. 26. 6 38. 21. 3 44. 21. 1 42. 21. 0 36. 21. 3 44. 21. 0 36. 21. 3 44. 21. 0 36. 21. 3 44. 21. 0 36. 21. 3 44. 21. 0 36. 21. 3 44. 21. 0 36. 21. 3 44. 21. 0 36.	5 34-8 34-3 1 1 31-3 32-3 32-3 32-3 32-3 32-3 32-	5 - 1 8 8 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 41.6. 6 48.7 5 31.6. 2 39.7 5 33.3 3 31.2 4 28.5 4 26.6 6 26.3 4 26.6 6 26.3 4 26.6 7 24.6 6 26.3 4 26.6 7 24.6 8 25.2 8 25.1 8 27.6 8 25.2 8 26.3	0.84 0.97	0 + 0 - 52 4 - 0 - 93 5 - 0 - 65 5 - 0 - 65 5 - 2 - 04 6 - 2 - 05 7 - 1 - 95 7 - 1 - 95 7 - 1 - 95 7 - 1 - 95 8 - 1 - 1 - 53 3	0, 390 0, 4, 010 6, 698 4, 350 3, 636 4, 595 4, 723 5, 181 5, 181 5, 181 10, 165 6, 268 7, 192 11, 150 6, 636 8, 149 11, 150 6, 636 8, 149 11, 150 6, 636 7, 52 8, 149 11, 150 6, 636 7, 52 8, 149 11, 150 11, 15	ne. n. ne. ne. ne. ne. ne. se. se. sw. ss. w. sw. sw. sw. sw. sw. sw. sw.	28 24 38 28 28 24 25 33 36 36 36 36 36 36 36 36 36 36 36 36	n. see. ss. ss. ss. ss. ss. ss. ss. ss. s	3	13 5 13 5 13 5 13 5 13 5 13 5 13 5 13 5

Table of miscellaneous meteorological data for December, 1888-Signal Service observations-Continued.

	1	At			pressure undredti	, in inches	1	Temperature of the air, in degrees Pahrenheit.							mid-	Jo of Lines	e in	nor- n, in	Winds.						
Stations and	abore feet.	à	Pom	peo.	Ext	omee.	mean.	from.		Extr	omes.		.09	Daily	y ran	ges. oa	eratur deg	tion,	from	0 v 6-	direc-		rimui	days.	udy days
districts.	Elevation a level,	Mean actual rometer.	Departure f	Mean redu	Highest barometer.	Lowest barometer. Date.	Pag Pag	Departure f	Max. Date.	Mean max.	Min. Date.	Mean min.	Monthly ran	lest,	Least.	Date. Mean relati	Mean temperat dew-point, d Fahrenheit.	Precipita inch	Departure in mal precip	Total me ment, mile	Prevailing di	Miles p. b.	Direction.	rai	o. of fai
Es. sorthwest-Con. Fort Buford Fort Totten	1, 900					29-52 22 1-0	3 20-1	111.0	58-3 4 54-022	32.9	- 9-3 29	11.0	67.6	34-8	19 5	8 15 82.	6 15-1	0-07	- 0.68 - 0.44	5, 003	q nw.		nw.	4 3	8 25
Port Yates		*****	*****	20000			26. 31.	+ 5.5	63.8 4	38-6	- 6.0 9	14-0	69.8	45-7	7 6-	1 16		1.96	- 0.70 - 0.15	*****	nw.		*****	I	**
Saint Paul La Crosse		29-12	+ 01	30-05	30-45 2	29.55 15 0.0 1 29.58 1 0.1 1 29.57 16 0.0	7 27.	7.8	56-0 23	35-2	2. 5 29	20-7	53-5	29-5	4 3	3 17 82- 7 26 78- 9 1 77-	4 21-0	2-03	- 0-68 + 0-75 + 0-86	6, 981	-8.	36	nw.	5 9	9 13
Des Moines Dubuque	866	29-16	-, ot	30-11	30-49 3	29-56 15 0-6	3 29.	+ 6.4	58-023 60-3 4 58-023	38-3	12.2 28 11.0 31 8.0 28	22.6	49-3	36.1	4 3-	5 16 75- 0 17 80-	1 22.0	2-44	0.95	5, 571	n.	30		20 7	15 3 15 3 12 7
Keokuk Cairo Springfield, Ill	618	29-79	- 02	30-18	30 - 50 20	29.49.260.	7 32.	1 0.0	61.223	40-6	14-4 28	27-4	16.8	27.2	4 3.	8 177.	0 25-6	2-40	- 0.58 - 1.20	6,812 5,844	nw.	30	8. W.	15 6 26 8	13 8
Saint Louis Missouri Valley.	571	29-45	+.01	30-15	30-48 29	29.60 10.9	1 33. 10 36.6	E	55- 0 24 59- 0 24	45.2	15.6 28	31.2	39-4 38-4	24.8	4 5-	91376.	40 20-4	2-OI	- I.01 - 0.40 + 0.47	7.837	W.	36 50	w.	26 7	14 9
Lamar	1, 356	28.68	- 03	30-16	30-48 31	29-65 15 0-1	3 36.0		60-0	45-8	17.4 20	31.04	12-0	27-7 1	0 2.	0 26 78.	3 29-3	5.73	+ 0.47	5,689 7,668	s. so.		1		8 10
Leavenworth	842	29-24	.00	30.16	30-57 31	29-54 15 1-0	3 33-1	+ 4.8	63.015	43.8	9.6 28	27.7	53-4	32.8	4 4.	1 25 77.	3 26-3	1-57	- 0.09	5, 385	nw.	30	B	24 7	7 10
Omaha Crete Valentine		*****	*****	*****			. 29.5	+ 8.3	66.8 4	40-8	9.6 28 1.9 26 - 1.8 26	23.8	4-9	41.7	4 4-	2 16 74- 3 16 73- 6 15 69-	0 21.6	0-26	- 0-08 C-00					. 6	
Fort Sully	1,600	28-32	04	30-09	30-58 31	29-55 23 1-0	3 23.8		67.0 A	36. I -	- 5.5 28 - 6.7 28	15-57	2.5	39-6	3 3.	16 72-	5 15-3	0-26	- 0.25 - 0.60	5, 384	nw.	36 1	nw.	3 5 4 5 I	6 6 7 7
Yankton	1, 234	28-74	03	30-10	30.00 31	29-57 15 1.0	3 26-4	+ 9-1	63.0 4 65.2 4 60.3 23	38-3	5.8 28 13.6 28	10-04	O- 4	37-0	8 3	1671.	0 17.6	0-68	- 0-13	5,728 6,488	nw.	34 8	nw.	16 6	10 5 12 4
Northern slope. Fort Assinaboine.	2,720	27-14	03	30.05	30-64 30	29.60 22 1.0	4 25-4	T 8.0	60.9 21 53-8 13 60-5 5	36-5-	- 8.4 27	15-56	9-3	41-32	1 6.	10 66.	4 14-9	0-60	- 0.11 - 0.74	8, 783	sw.	48 1		8 4	19 4
Fort Custer Fort Maginnis Helena	4, 340	25.52	T.03	39-97	30. 52 30	29.48 22 1.0 29.60 22 1.3	4 37·0 3 23·6	+12.2	60.5 5	44-9	4-4 24 -14-0 29	25.65	6-1	34-5	5 8.	14 00-	2 23.1	0-78	+ 0.11	8,073	nw.		nw.	8 8	10 10
Cheyenne	6, 105	24-01	+.08	30-13	30. 70 31	29-55 14 1-1	7 18-4 4 30-8	+ 6.0	61.022	33-0-	2.5 26	9-37	2-8	35-5 I	3 5.	17 40-	9.8	0-23	- 0. I3 - 0. OI	3,056	w. nw.	37 1 36 9	nw.	4 3	6 13
Fort Laramic North Platte Rapid City	2,841	27.10	.00	30-14	30.66 31	29-54 15 1-1	3 26-6	+ 4.8	63.0 ¶ 66.8 4 68-4 4	44-9-	-13.0 26 - 2.9 26	16.86	0.7/	12-2 4	4 3-4	25 64 24 70-	0 15-2	0-43	- 0-05 - 0-29	5, 597	W.	36 1	w.	2 3	7 9
Fort McKinney	35 200	24-96		30.10	30-65 31	29-45 22 1-1	7 36-7	+ 6.2	68-0 4	44-3	- 2.0 ¶	25-46	6-0	90.0	3 3-4	34 02-	20-4	0- 20	- 0.13	4, 891	w.	30 9	1	1 3	5 12
Colorado Springs. Denser	5, 281	24-77	+.07	30-13	30-73 31	29-55 14 1-1	33-7	+ 4-3	67-5 4	48.6	7-1 31 7-2 26	24 - 0 6	0.33	19-3	3 4 . 2	2 56.1	13-9	0-07-	- 0.10	4,622	8.	30 9			2 8 3 12
Pueblo	1, 384	25-01		30-12	30-59 31	29-44 15 1-1	32.6	+ 7·2 + 7·4	67.6 4	47.0	12.030	25-45	5-64	11-8 9	4-4	25 55-3	25.8	0-22 -	- 0-32 - 0-51	6,413	nw.	30 II 44 # 48 #	IW. 2	4 4	4 II 5 7 6 9
Fort Reno Fort Supply		*****	****	*****	*****		42.8	*****	68.0 1	54- I	10.9 26 21.3 20 20.0 27	31.64	6.7					2-34 -	+ 0.83 . - 0.19 .		8.		****	. 8	
Fort Elliott	2,650	27.34	- 06	30-12	30.57 31	29-50 15 1.0	37-4	+ 5-9	72.0 4	52.8	19-4 30 16-0 27	31.05	2.64	12-0 4	3 - 3	20 04 - 8	25-5	0-84	- 0-03	8, 080	nw.	38 E		2 4	5 7 6
Southern slope. Fort Sill Abilene	1, 200	28-88	1.01	30-16	30-56 31	29.62 150.9	40.5	+ 2.7	69-310	55-2	30- 2 30	33-7 49	9-13	7.310	5.0	29 80-0	34-4		0.65	6, 012	n.	38 s 32 s	. 2	3 7 6 1	7 7
Fort Davis Fort Stanton	4, 928	25-23	.00	30-14	30.50 3	29.82 15 0.6	43-4	+ 0.6	68.0 1	57-2	26.0 4 3.4 3	36.04	2.03	8.0 5	4.5	30 58-6	25-2	0- 20 -	- 0.08	5, 145	SW.	38 8	W. I	5 5	6 8
Southern plateau. El Paso	3, 796	26.29	01	30-13	30-48 3	29-79 14 0-6	44-1	+ 0.3	70-2 22	57-7	29.028	34-8 41	1.23	1.8 5	5-0	31 58-0	26.9	0-05-	- 0.65	5, 218	nw.	46 n	w. I	5 2	
Lava Santa Fé Fort Apache	7,026	23.29	- 04	30.18	30.59 3	29-77 15 0-8	30-4	+ 2.3	57.6 11 52.0 ¶ 68.7 13	11.8	19-031 15-531 18-412	24-8 30	5.52	9.012	5-5	23 64.0	18-8	0-66-	- 0.11 . - 0.13 . - 1.08 .	4, 168	1	34 8	e. 2	3 6	6 1
Fort Bowie Fort Grant	4.862	25.27	1.02	30-16	30.49 4	29-82 14 0-67	42.2	- I-4	57.5 22 4	19-4	29.030 29.530	35. 1 25	1. 5 2	2.2 10	6.8	7	*****	2-12-	- 0.15 . - 0.24 . - 1.24 .		sw			. 7.	
Fort McDowell Fort Thomas Fort Verde	S. STA						45.4		70-7 13 6	P. C.	32.230													8 -	
Phonixi	******	化化物物的复数	2288				*****		57-8 19		18. 2 31	31-332		3·3 5	6.8	23 78-0	27-3	2.04	1.28	4.611	W		W. 2		
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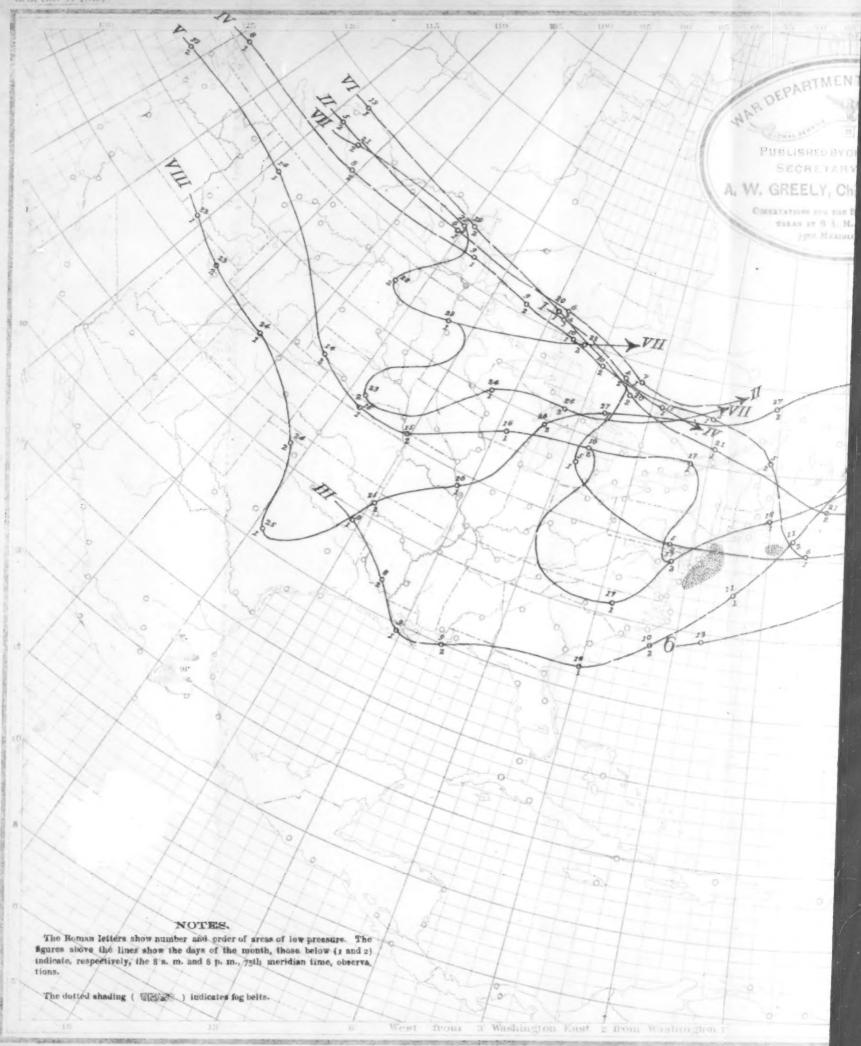
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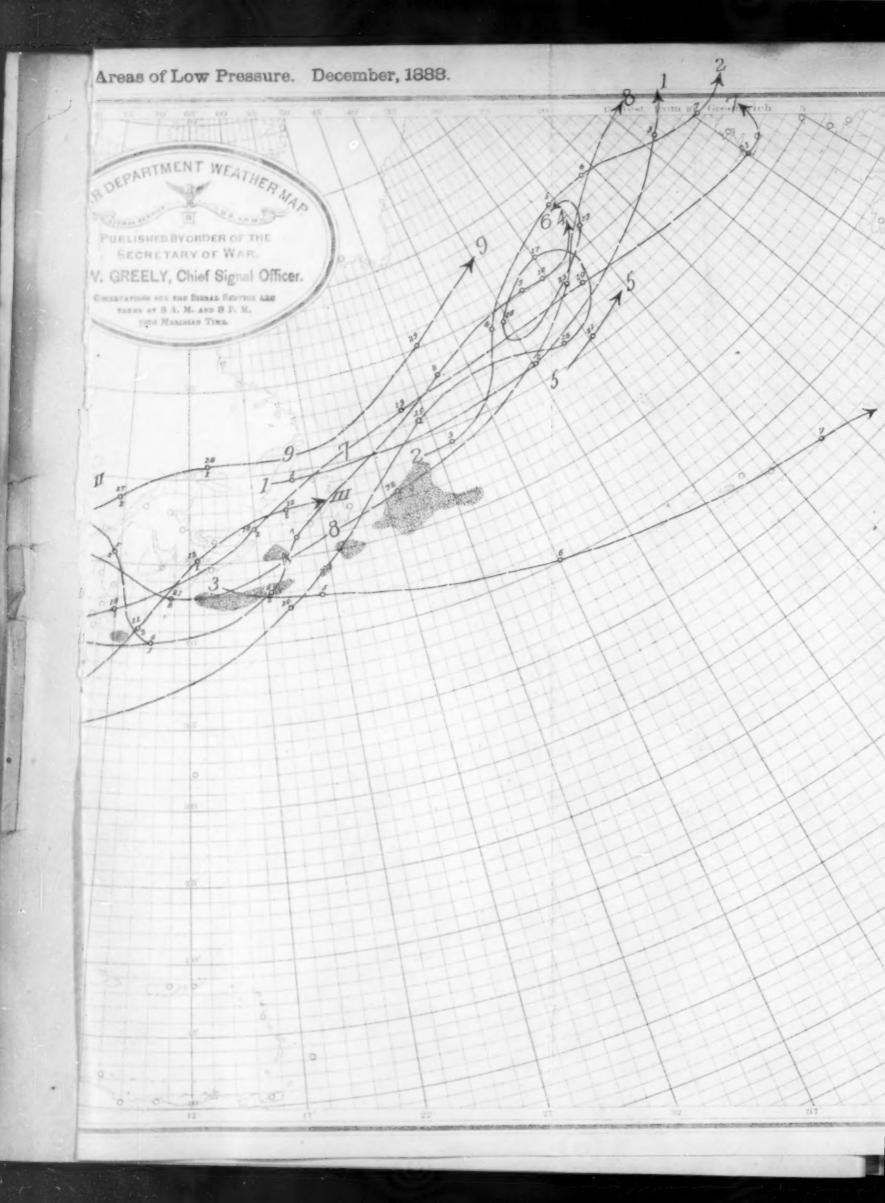
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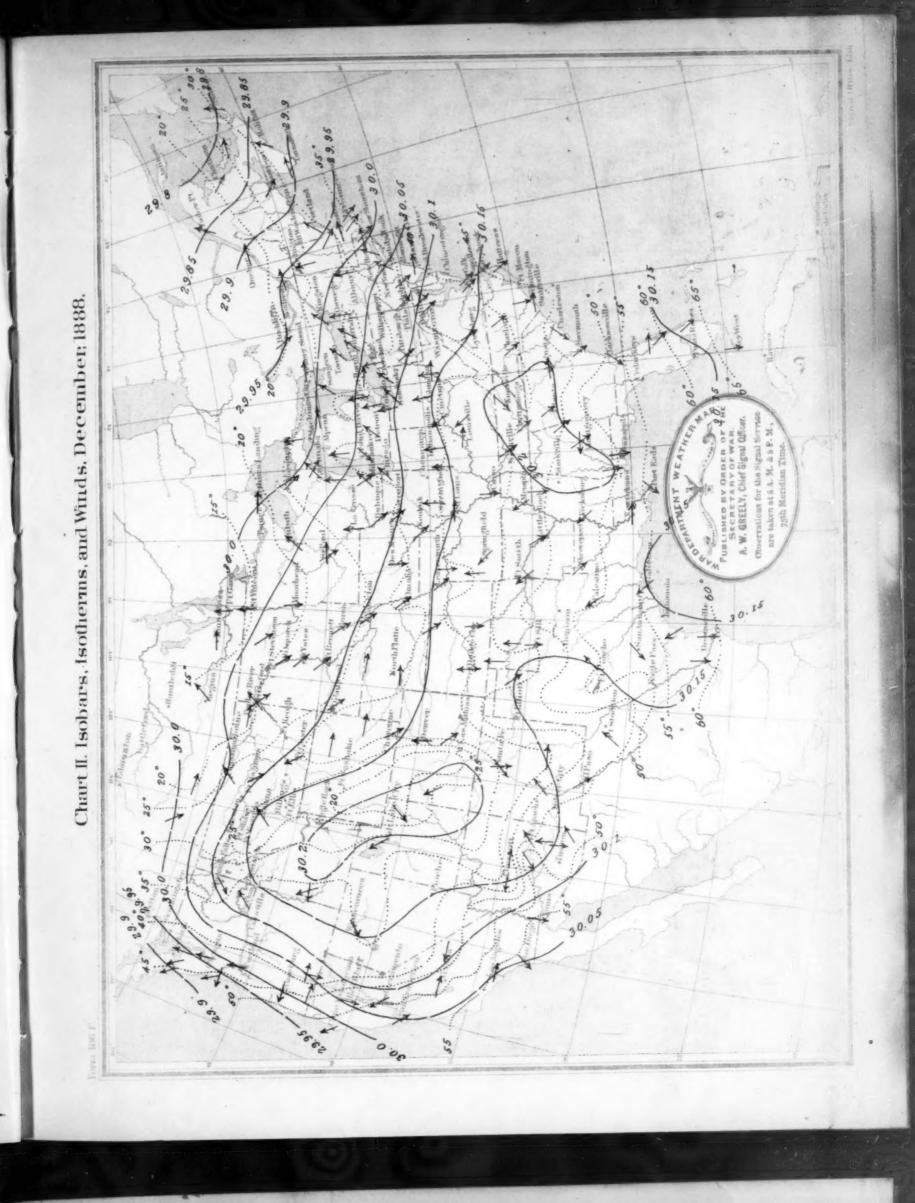
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ch. v	Chinook, by Prof. Hazen
	Chinook, by Prof. Hazen Jan. '88, 19-20













w Market, Dr. Geo. D. Norris

Antelope Valley, Mrs. J. H. Hamilton.
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Bangharta, Geo. Banghart.
Cedar Springs. R. E. Norton.
Flagstoff, Mrs. F. B. Jacobs.
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Holbrook, David Rope.
Honobuco. J. W. Stump.
Lochiel, San Ratasel Cattle Company.
Preacott Junction, W. W. Burnett.
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Tevistor Miss Belle Tevis.
Tucson, Edward L. Wetmore.
Willisms. J. T. Ryan.
Willow Springs, F. A. Chamberlin.
Winslow, L. W. Boberts.

Arkansas
Lead Hill, Silas C. Turabo.
Little Rock, Arkansas Weather Service.
California.

Asderson, Dr. A. Fouch.
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Dakotta.
Brookings, Prof. Lewis McLouth.
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Kimball, A. S. Stuyer.
Nebster, Arthur Betts.
Woonsocket, L. O. Libbey.

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Newark, Prof. Geo. A. Harter.
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Place of observation and ob-loans. Lewiston, Robert Schleicher.

Charleston, J. B. Basey.
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Sycamore, Roswell Dow.
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Indiana.

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INDIANA:
Butlerville, C. F. Hole.

*Connersville, Bobt. Hessier.
Jefferson ville, J. C. Loomis.
Laconia, Lafe (Tozier.
La Fayette, Indiana Weather Service.

*Logansport, Thos. B. Helm.
Mausy, Elwood Kirkwood.
Salem, J. W. May.
Scalesville. Urias Wilson.
Sunman, B. F. Ferria,
Vevay, Prof. Chas. Boerner,
INDIAN TERRITORY.

*Caddo Creek, B. Leming, M. D.
Iowa.
Amana, Conrad Schadt.
Ames, J. Rush Lincoln.

Amans, J. Rush Lincoln.
Bancroft, H. N. Renfrew.
Cedar Rapids, H. D. Olds.
Clarinda, A. S. Van Sandt.
Clinton, Luke Roberts.
Cresco, Gregory Marshall.
Cromwell, Harry C. Harrison.
Denmark, G. B. Brackett.
Des Moines, Adolphus Voegeli.
Dysart, Jos. Dysart.
Elkader, J. N. Hamilton.
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Glenwood, Seth Dean.
Glenwood, A. Schappel.
Grinnell, Prof. S. J. Buck.
Hampton. E. C. Grenelle.
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"Mount Pleasant, Prof. Max E. Witte.
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"Wesley, Wm. Ward.

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Cuuningham, E. Shaw.
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"Emporis, Prof. J. H. Dinsmore, Jr.
Englewood, C. D. Perry.
Globe, Wm. Featherston.
Havensville, L. W. Dennen.
Independence, J. M. Altaffer.
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Salina, J. H. Glisson.
Santa Fe, Geo. W. Ball.
Sedan, J. W. Goodell.
Topeka, Kansas Weather Service.
Tribune, S. B. Jackson.

Place of observation and ob KANNAS - Continued. Wakefield, Wm. P. Cochran. Wallington, John H. Wolfe. Wilson, Miss Lizzie Dolphin Yates Centre, F. R. Gray.

ERRICET.

ERRICET.

ENVIOLE.

ENVIOLE.

Carlisle, W. H. Fritts.

Elkin. Chas. Ogden.

Frankfort, E. C. Went.

Louisville, Kentucky Weather Service.

Millersburgh, C. Pope.

South Fora, A. B. Gilbert.

LOUISIANA.
Grand Coteau, Rev. C. M. Widman.
Liberty Hill, E. A. Crawford.
- Luling, F. M. Rogers.
New Orleans, Louisiana Weather Service

MAINE.
Bar Harbor, Joseph Wood,
Corniah, Silaa West,
"Gardiner, Henry Richarda,
Kent's Hill, W. C. Strong.
Orono, Prof. M. C. Fernald.

MARYLAND.

Orgno, Prof. M. C. Fernaid.

Barren Creek Sp'ge, Albert E. Acworth
Cumberland, E. T. Shriver.
Fallston, Prof. G. G. Curtis.
Gaithersburgh, John T. De Seilum.
Galens, Henry Parr.
Gambrill's, J. E. Moque.
Great Falls, Washington Aqueduct.
Jewell, Joe. Plummer.
McDonogh, McDonogh Institute.
Mt St. Mary's, M't St. Mary's College.
Woodstock, Woodstock College.
Woodstock, Woodstock College.
Massachusetts Agricultural
Experimental Station.
Blue Hill, Rev. A. K. Teele.
Blue Hill Observatory. A. L. Rotch,
Cambridge, Harvard College Obs'y.
Deerfield, Rev. A. Hazen.
Dudley, Conant Observatory.
Fall River, C. V. S. Remungton.
Heath, B. B. Cutler,
New Bedford, Thomas R. Rodman,
Newburyport, F. V. Pike.
Provincetown, John R. Smith.
Royalston, Miss Lizzie W. Chase.
Somerset, Elisha Slade.
Tauuton, E. U. Jones, M. D.
Westborough, G. S. Newcomb..
Williamstown, Williams College Obs.
Worcester, J. B. Hall.
Michigan, '
Benton Harbor, A. J. McCave.
Brimingham, S. Alexander.

Worcester, J. B. Hall.

Michigan, '
Benton Harbor, A. J. McCave.
Birmingham, S. Alexander.
Harrivville, Dr. D. W. Mitchell.
Hudson, Major A. H. Boies.
Kalamuzoo, W. A. Black.
Lansing, Dr. H. B. Baker.
Lansing, Michigan Weather Service.
Marshali, G. H. Greener, M. D.

Mio, J. Randall.
Mottville, J. A. Hartzler.
Thornville, John S. Caulkins.
Traverse City, S. E. Wait.
Ypsilanti, J. C. Bemiss.

Minnezota.

Argyle, J. J. Stone.
Le Sueur, L. B. Davis.
Minneapolis. Wm. Cheney.
Northfield, Minnesota Weather Service.
Mississippi.

Biloxi, Dr. R. G. Hinsdale.
Jacknon, W. J. Brown, Jr.
Palo Alto, W. H. Hill.
University, Mississippi Weather Service.
Missouri.
Conception, Rev. M. Eckstein.
Excelsior Springs, A. Reinisch.
Frankford, W. W. Vermillion.
Grand Pass, E. R. Graham.
Lakenan, C. Ayros.
New Frankfort, G. W. Hawkins.

Grand Pass, J. R. Grand Lakenan, C. Ayros. New Frankfort, G. W. Hawkins. Ozark, J. J. Brown, Pierce City, J. J. Spiiman. Princeton, Wm. Hirons, St. Louis, Missouri Weather Service. MONTANA.
Virginia City, Eugene Stark.

Place of chaercation and observer.

Namaska.
Crete, Nebraska Weather Service.
Culbertson, G. D. Carrington.
David City, John B., Townsend.
De Soto, Chas. Seltz.
Fairbury, Dr. I. Humphrey.
Falls City, A. B. Newkirk.
Fremont, Isaac E. Henton.
Genon, Geo. S. Truman.
Hay Springs, Wm. Waterman.
*Kimball, Wm. G. Barton.
Lincoln, University of Nebraska.
Marquette, John Ellis,
Syracuse, P. W. Risser.
Tecumseh, W. L. Dunlap.
*Weéping Water, G. Treat,
Nevada.
*Carson City, Chas. W. Friend.
Carson City, Nevada Weather Service.
New Hampshire.
Antrim, Frank W. Palmer.
Berlin Mills, Q. A. Bridges.
Concord, W. L. Foster.
Nashua, Chas. H. Webster.
Asbiand,
Belmont,
Lake Winl piacoge
Bristol.

Belmont,

Lake Win'l placagee Cotton and Woollen Manufacturing Co.

Bristol.
Lake Village,
Weir's Bridge,
Wolfehorough,
Shaker Village, N. A. Briggs.
New Jerrery,
Beverly, C. F. Richardaon.
Clayton, W. T. Wilson.
Egg Harbor City, H. Y. Postma.
Moorestown. Thos. J. Beans. [Service.
New Brunswick. New Jersey Weather.
Readington, John Fleming.
South Orange, Dr. W. J. Chandler.
Vineland, Dr. O. H. Adams.
NEW MEXICO.

Readington, John Fleming,
South Orange, Dr. V. J. Chandler,
Vinehand, Dr. O. H. Adams.

NEW MEXICO.
Coolidge, B. S. Mullin,
Gallinas Spring, J. E. Whitmore.
Lan Vegas, F., W. Chatfield.

New York.

Ardenia, Richard B. Arden.
Auburu, Geo. Casey.
Boyd's Corners, Thomas Manning.
Cooperstown, G. Pomeroy Keese.
Eden, W. P. Hunt.
Factoryville, T. P. Yates.
Friendship, Jesse D. Rogers.
Geneva, Mrs. N. S. Yates.
Heas Road Station, C. H. Spaulding.
Humphrey, Chas. E. Whitney.
Ition, G. A. Trowbridge.
Ithaca, Cornell University.
Ithaca, New York Weather Service.
Le Roy, Prof. F. M. Comstock.

"Lyon, Dr. M. A. Veeder.
Middleburgh, F. X. Straub,
New York. Central Park Observatory.
Nineveh, W. J. Barnett.

"North Volney, J. M. Patrick.
Palmyra, L. D. Cummings.
Pendleton, W. D. Lovell.
Penn Yan, Geo. R. Young.
Rose, George Smart.
Savona, M. S. Collier, M. D.
Setauket, Selah B. Strong.
Son.erset, J. W. Thurber.
South Canisteo, J. W. Wilson.
Utica, Thomas Birt.
Vermillion, E. B. Bartlett.
Waddington, Jos. Graves.
White Plains, Prof. O. R. Willis.
North Canolina.
Chapel Hill, Prof. J. W. Gore.
Hot Springs, Dr. W. F. Ross.
Lenoir, Dr. R. L. Beall.
Raleigh, North Carolina Weather Service.
Statesville, W. A. Eliason.

"Tarborough, E. V. Zreiler.
Weldon, T. A. Clark.

OH10.
Bellevne, Wm. Sheffleid.
Cleveland, G. A. Hyde.

Bollevue, Wm. Shemleld.
Cleveland, G. A. Hyde.
College Hill, John W. Hammitt.
Collinwood, Wm. Smeed.
Columbus, Ohio Weather Service.
Demoe, B. B. Ault.
Elyria, C. W. Goodspeed.
Garrettsville, S. M. Luther.
Gracey, H. M. Scott.

Place of observations of the Signal.

Place of observation and observer.

Onto-Conissard.

Jackson occough, Dr. J. B. Owsier.

Lordsideen, W. S. Dean.

Napoleou, Dr. T. C. Hunter.

New Albews, T. M. Seweil.

North Lawishingh, H. D. Gowey.

Portsmouth, Dr. D. B. Cotton.

Ruggles, Peter Rowman.

Tidin, Rev. T. H. Sonediseker.

Westerville, Prot. John Brywood.

West Milion, Luke S. Motte.

Yellow Springs, Chas. W. Rice.

Ourous.

Albany, John Briggs.

Randon, tico. Bennett.

Last Portland, Dr. tico. Wigg.

Loin. Thos. Pearce.

Sta Grande, J. K. Romit.

McMinnville, Prot. W. J. Crawford.

Mount, Angel, Rev. F. Barnabas Hald.
Hitoschurz, Oregon Westher Service.

Yaquins L. D., Dr. John G. Jessup.

PENNYLVANIA.

Altoona, Chas. B. Budley, M. D.

Catawissa, Roht. M. Graham.

Schrion, Prot. C. M. Thomas.

Corry Wm. Loveland.

Braton, H. D., Miller.

Lyberry, Theo. Day.

Lation, Dr. J. W. Moore.

Frankiln, Joseph Bell.

Germantown, Thos. Meedan.

Grampian Hills, Nathan Moore.

Haverford, Prot. F. P., Leavenworth.

Nobastown, E. C. Lorentz.

Mendville, David Logan.

Grampian Hills, Nathan Moore.

Haverford, Prot. F. P., Leavenworth.

Nobastown, E. C. Lorentz.

Mendville, David Logan.

Grampian Hills, Nathan Moore.

Haverford, Prot. F. P., Leavenworth.

Nobastown, E. C. Lorentz.

Mendville, David Logan.

Grampian Hills, Nathan Moore.

Haverford, Prot. F. P., Leavenworth.

Nobastown, B. C. Lorentz.

Mendville, David Logan.

Philipsburgh, G. F. Durkle.

Quakertown, J. L. Heacock.

Resiling, C. M. Dechant,

Salem Corners, T. B. Orchard, M. D.

State College, Agricultural Experi
mental Station.

Proy, M. Gustin.

Nollsborongh, Hirum D. Deming,

West Chester, Dr. Jesse C. Greed,

Westowa, W. F. Wickershan,

Soure Canozina.

Alken, Dr. W. H. Geddings.

Cadar Springs, J. T. Bayeriy. (vice.

Columbia, South Carolina Weather Ser
Rixwood, Colin Mesca.

TENNESSE.

Ashwood, Rev. C. F. Williams.

Aretin, P. B., Calhoon.

Place of observation and observe TEXNESSES—Continued, Milan, Dr. M. D. L. Jardan, Nash-bic, State Bourd of Heath, Riddleton, F. K. Fergusson.

Riddleton, F. K. Fergusson.

Riddleton, F. K. Fergusson.

TEXAP.

Austin, Oscar Samosta.
Bear Creek Ranche, W. H. Potter.
Cedar Hill, J. P. Berry.
Ceivarne, P. J. Norwood.
College Station, Prof. J. H. Kinealy.
Colorado, Fred R. Blound.
Scomanche, E. N. Wiesendanger,
Corsicana, W. H. Hamilton.
Decatur, H. D. Donald.
Gallims, Lum Woodrinf.
Galveston, Texas Weather Service.
Granbury, E. H. Snider.
Lampasas, Dr. C. M. Ramsdell.
Mosquite, Silas G. Lackey.
Mexia, Chas. F. Mercer.
New Ulm, C. Kunze.
Silver Falls, C. M. Tifford.

Versort.

Brattleborough, W. H. Childs.
Burington, W. B. Gaics.
Coventry, W. H. Tibbetts.
East Berkshire, J. H. Mears.
Lumenburgh, Dr. Hirsan A. Cutting.
Manchester, Rev. E. P. Wild.
Middlebory, S. Holton.
*Newport, M. B. Tresher.
Saint Johnsbury, P. Fairbanks.
Straford, H. F. J. Serioner.

Versonta.

Bird's Nest, C. R. Moore

Straford, H. F. J. Serioner.

Vinonia.

Bird's Nest, C. R. Moore.
Christiansburgh, H. D. Walters.
Dale Enterprise, J. L. Heatwole.
Marion, A. T. Lincoin.
Petersburgh, Jax. M. Colson, Jr.
*Rappahannock, W. H. Ireland.
Spotrylife, B. W. Jones.
Summit, J. R. Sim.
University of Va., James Wearmouth.
*Varioty Milis, J. H. Micklem.
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*Clarksburgh, R. T. Lowndes.

*Hartmonsville, W. C. Tobb.

Helvedia, Dr. C. T. Stocky.

Middlebrock, S. F. H. Hewit.

*Parkersburgh, T. G. Field.

Rockport, R. D. J. Echola.

Place of observation and observer.

Where Virous 12—Compared.
Tyler Creek, F. M. Swann.

White Subber. spring, T. Surber.
Where Subber spring, T. Surber.
When Subber. Spring, T. Surber.
When Subber. Spring, T. Surber.
When Surber. Spring, T. Surber.
Beliott, Beloit Colleg Olbertwalery,
Cantle, B. C. Cartis.
Delayan, George L. Cuffe.
Deuster, G. H. Kruschke.
Sembarsses, J. E. Breedl.
Fond du Lae, J. C. Wedge.
Fredonia, B. H. Meyer.
Standanses, J. E. Breedl.
Fond du Lae, J. C. Wedge.
Fredonia, B. H. Meyer.
Standanses, Edward Philosek.
Lincoin, A. J. Leone.
Mailson, Washborn Observatory,
Manitowoe, Miss Cashis Lups.
Cohkosh, Prof. W. N. Bitunger,
Warroutsta, G. H. Yappi.
Weston, R. B. Wilkinson.
Burnside, S. A., Dr. C. J. Hering.
Cirand Turk, W. Indust tiese, I. Hibbs.
Guanajack, Maxico, Lettf Obey, S.
Hamilton, Bermuda, General Russell
Hastings.
Killianoo, Alaska, Jos. Zuboff.
Leon. Mexico, Prof. M. Leal.
Mambian, Mexico, Loff P. Acosta.
Mexico, Mexico, Tool, A. Yeole
Port an Prince, Hayli, Vrof. I. Scherer,
Prueblo, Mexico, Jost A. y Borrills.
New Observers, commissing des.
Men December, 1888.
Principling, Als., W. J. Gerret.
Eagle Pass, Ariz., Dr. B. B. Tripp.
Winslow, Ariz., C. B. Yos.
Lolegrove, Cal., Seward Code.
New Westminster, B. J. Cupt. A Peele
Port an Prince, Hayli, Vrof. I. Scherer.
Prueblo, Mexico, Jost A. y Borrills.
New Observers, commissing des.
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Eagle Pass, Ariz., Dr. B. B. Tripp.
Winslow, Ariz., C. B. Yos.
Lolegrove, Cal., Seward Code.
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Pueblo, Mexico, Jost A. y Borrills.
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Winslow, Ariz., C. B., Yos.
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Port and Prince, Hayli Vrof. I. Scherer.
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Crowley, La. A. B. Goodfelt.
New Hostin, M. Y., F. G. Held.

Hilitary posts from which meteorological reports were received, through the Surgeon General of the Army, in time to be used in the preparation of the Morely Weather Hence for December, 1888.

Anhama. Catifornia. Con'd. Idaho. Maine—Con'd. Manesa—Don'd. New York—Con'd. Riogoid, Fort. Arisona. Colorido. Siecusa, Fort. Maryland. Sherman, Fort. Massacenests. Maryland. Sherman, Fort. Massacenests. Massacenests. Mothers, Fort. Willett's Point. Millett's Point. Millett's Point. Myer, Fort. Willett's Point. Myer, Fort. Sidney, Fort. Millett's Point. Myer, Fort. West Paint. Myer, Fort. Scalage, Fort. Myer, Fort. Markage, Fort. Markage, Fort. Mother, Fort. Markage, Fort. Mother, Fort. Markage, Fort. Myer, Fort. Markage, Fort. Marka

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Bolid Barracks.
Sherman, Fort.
Illinois.
Rock Island Arsenal.
Sheridan, Fort.
Indian Territory.
Gibson, Fort.
Supply, Fort.
Kansas.
Hays, Fort.
Leavenworth, Fort.
Leavenworth Prison.
Riley, Fort.
Kenticky.
Newport Barracks.
Manse.
*Preble, Fort.

